

# 61 病房 病房手冊



高雄榮民總醫院骨科部  
97.09.01 初版

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## 病房簡介

本病房是骨科病房，共有 42 床（81 病房另有 8 床，骨科總計 50 床），共有 31 位醫療相關人員，病房主任為黃志賢主任、主治醫師 11 位（含 3 位兼任主治醫師）、兼任資深住院醫師 1 位、總醫師 1 位、住院醫師 5 位、醫師助理 7 位、副技師 1 位、技術師 2 位、石膏技術員 1 位、以及行政人員 1 位。常見病症以骨科為主，平均住院天數 7 天。

# 醫療人員職務規範

## 病房主任職責

### 病房環境及設備部份：

1. 了解病房醫療軟硬體設備（管制藥品等），
2. 了解工具與參考手冊之設置，
3. 編製病房手冊，
4. 了解護理站電腦使用檢驗、影像資料、藥品及電子醫學資料庫使用規範，
5. 規劃主治醫師與病患家屬會談用討論室，
6. 了解病房各種醫療及教學表單之擺置。

### 病人住院診療部份：

1. 督導新病患入院，
2. 督導主治醫師每日迴診，
3. 督導口頭及臨時處方的執行，
4. 督導住院病歷完成，
5. 督導出院病歷完成與修訂，
6. 督導住出院診療計劃之執行。

### 病歷改進事項部份：

1. 督導首頁記錄，
2. 督導 Special Chart 登錄，
3. 督導住院診療計劃，
4. 督導出院診療計劃，
5. 督導24小時內主治醫師記錄。

### 醫療品質與病人安全部份：

1. 醫療品質指標監測（約束、bedsore、跌倒、院內感染等），
2. 危險值通報之後續處理的追蹤，
3. 醫療不良（異常）事件處理，
4. 督導交班事宜（新病患及危急）VS and R，
5. 主持病房會議。

### 評鑑工作部份：

1. 與病房護理長（副主任）共同負責評鑑規劃、準備及稽核工作，
2. 病房自評表完成，
3. 各合作部門溝通的單一窗口，
4. 新制評鑑病房相關卷宗準備。

## 科主任職責

1. 綜理專科醫療、教學、研究與行政事宜，
2. 協助病房主任編制病房手冊，

3. 督導全科病歷撰寫，
4. 專科評鑑工作之準備。

### 主治醫師職責

#### 病患入院 24 小時內：

1. 主治醫師探視病患說明並親自交付入院診療計劃（中英文尤佳），
2. 病情說明原則：
  - (1). 避免運用過多專業術語，
  - (2). 應盡量以病人能理解的語言進行說明，
  - (3). 使用資料、圖片協助，
  - (4). 確認病人已完全理解，
  - (5). 說明之內容必須涵蓋 (a)病人健康狀況、症狀，(b)治療計畫的概要、代替性療法，(c)預測效果及危險性，
3. 主治醫師完成病況摘要（VS Note），
4. 指導並修正住院醫師病歷與處方。

#### 病患住院中：

1. 每日病房迴診與住院醫師討論診療項目和已知報告同時向病患說明，
2. 每日指導並修正住院醫師病歷與處方，
3. 安排手術應親自向病患與家屬解釋病情，
4. 宣告病危應親自向家屬解釋病情，
5. 轉至隔離病房應親自向病患與家屬解釋病情。

#### 例假日：

原則上每位主治醫師負責自己病患照護，但就危急和特殊病患需與值班主治醫師交班。

#### 病患出院前 24 小時內：

1. 主治醫師探視病患說明並親自交付出院診療計劃（中英文尤佳），
2. 晨間查房使病患中午前出院為原則，
3. 督促住院醫師於 72 小時內完成出院病歷，
4. 出院病歷修正處由主治醫師在 HIS 系統中更正。

#### 主治醫師與會診醫師的資格、責任與參與程度：

1. 主治醫師與會診醫師的資格均需為取得專科醫師資格之醫師，
2. 會診醫師以親自看診為原則及提出專科診療建議，
3. 主治醫師就病患之整體身心與家庭狀況決定採用會診醫師提出診療建議。

### 總醫師職責

總醫師除熟習骨科病患手術技能與臨床照顧與手術外，另一目的在於培養成為優秀臨床教師、訓練指導資淺住院醫師、實習醫師、見習醫師之教學與行政能力，

作為將來擔任主治醫師之準備。

#### **行政總醫師：**

1. 負責排班事宜，
2. 安排科內相關活動，
3. 公文之簽收與宣達，
4. 急診會診醫師，
5. 協調主治醫師之年休與各類請假事宜，
6. 執行科務會議與部務會議之記錄，
7. 收集與統計科內之相關資料，
8. 科內特殊器械之保養與維護。

#### **行政能力訓練：**

1. 上班時間由行政總醫師負責簽床作業與急診會診，
2. 安排科內相關活動，如年終尾牙、慶功宴、各類休閒活動等，
3. 公文之處理原則：若為緊急之公文，請第一時間聯絡相關人員簽收並處理；若為一般之公文，請在晨會後宣達並請科內醫師閱覽後簽名，
4. 協調主治醫師之年休與各類請假事宜，
5. 執行部務會議之記錄，
6. 收集與統計部內之相關資料，
7. 部內特殊器械之保養與維護，
8. 月終學員各式表單之收集，包括導師導生座談記錄、住院或實習醫師對主治醫師教學評量表、住院或實習醫師考核表、住院或實習醫師工作考核表、總醫師床邊教學記錄，
9. 於月底交接時，說明未催收完成之事務，請下各月教學總醫師協助完成。

#### **教學總醫師：**

1. 執行月初之 orientation，
2. 負責各類教學活動之舉行與記錄之收集，包括晨會、期刊研討會、死亡與併發症討論會、教學門診、教學住診、總醫師床邊教學等，
3. 急診會診醫師，
4. 指導學員病患照顧之相關問題，
5. 協調與分配住院醫師照顧之病人數，
6. 教導學員病例之繕寫，
7. 協助學員執行侵入性之治療與檢查，
8. 月初及月終學員之學習評量，
9. 學員之評分作業，
10. 學員各式表單之收集，包括導師導生座談記錄、住院或實習醫師對主治醫師教學評量表、住院或實習醫師考核表、住院或實習醫師工作考核表、實證醫學記錄表、總醫師床邊教學記錄。

#### **教學能力訓練：**

1. 每日下午帶領團隊之學員診對其照顧之病患進行 service round，並給予教學，
2. 每月至少一次針對學員照顧之病患進行總醫師床邊教學，

3. 按照行事曆所排定之時間對學員進行臨床技術訓練，
4. 教導學員進行侵入性之治療與檢查之禁忌與適應症、可能之併發症、詳細的流程、與如何向病患或家屬充分解釋，
5. 修改學員繕寫之病例，並針對學員錯誤或不足之處給予糾正與回饋，
6. 每日至少檢查一次學員所開立之醫囑並適時地進行修正；針對病情複雜之病患，應親自帶領學員進行醫囑之開立並給予教學，以達到實務學習之效果與病患安全之考量，
7. 指導學員進行病情之說明，並請學員實際演練，給予學員指正與回饋，
8. 指導學員以實証醫學之方式針對病患之問題進行資料之搜尋以期解決病患之問題，並且指導學員進行期刊與論文之選讀與 PowerPoint 之製作，
9. 每月月初與月終對學員進行前測驗與後測驗，以比較接受訓練後之整體學習效率，在每次測驗後必須給予指正與回饋，
10. 針對病情複雜之病患，應親自帶領學員接新病人，教導學員病史之詢問、理學檢查、相關實驗室與影像學之檢查與醫囑之開立，
11. 病危病患轉加護病房時，總醫師應指導學員 transfer note 之繕寫與與詳細之交班事宜，
12. 指導學員針對病危或末期病患之家屬進行病情之解說，並適時給予醫學倫理相關議題之教育，
13. 協調與分配住院醫師照顧之病人數，避免學員因負荷過重而影響學習效果，病人數上限為 10 床，最少不低於 6 床。

## 住院醫師職責

### 工作規範：

1. 接完新病人後應立即記下 Acceptance Note，入院病歷應於 24 小時內完成，
2. 隨時掌握病人病情，第一線處理病患的問題，有疑問時立刻尋求總醫師或主治醫師的協助（經常模擬家屬或病患可能提出之疑問，嘗試演練回答的內容或與資深醫師討論，有助於減少答不出來的窘境，又可以增加病患的信任感），
3. 侵入性、不熟悉的檢查、治療或手術，一定要尋求資深醫師的協助（由做中學很好，但是有人看著做再給回饋會學到更多，對病人的安全也更有保障），
4. 接新病人前，一定要先看病人的舊病歷及檢查報告。即使其他 Medical Team 的人員已經做過 PE，自己也要再 Take 一次 History 及做 PE，
5. 開立檢查要適切，不急著看結果的或不影響處置的檢查，就要思考是否真的必須開立。儘量少開立套餐式的檢查，例如 CBC、screen panel，
6. 出院當天要完成病歷記錄，要有出院計畫（包含出院建議事項、衛教、預約門診時間及重要注意事項等），出院病歷摘要要在出院三天內完成，
7. 按時完成核心課程、六大行醫能力自評表及學習護照，主動與指導醫師討論，並設定學習目標，定期要求導師審視學習護照，
8. 每天書寫病歷，按時完成醫策會要求之醫法倫、醫品及實證醫學的記錄，並請主治醫師協助完成或複審。昂貴或特別的檢查，務必書寫開立的理由，
9. 接受總醫師或主治醫師指派準備晨會或床邊教學病例報告、雜誌選讀、影像聯合討論個案、或死亡個案討論等報告，
10. 病房工作、值班、或學習等有困難時，務必反應給總醫師、主治醫師或病房主任，

11. 實習醫學生至骨科部受訓時，由本院之住院醫師帶領學習。

**住院醫師與實習醫學生工作注意事項：**

1. Morning Meeting 每天 08:00 在骨科辦公室舉行，開會時提出當天與前一天手術病例予以討論，
2. 查房通常在晨會前後舉行，也可能於手術中空檔查房，
3. 查房前一定要事先看過病人（掌握臨床狀況）及其最新臨床資料（以免查電腦浪費時間），
4. 主治醫師任務繁忙，流暢的查房流程才有時間多教學討論，否則查房時只能著重照顧病人的臨床工作，
5. 報 cases 時，應按照 Admission Note 的格式報告，著重於診斷及與手術治療方式，
6. 若有病人出院，完成出院病歷摘要後，於開始查房前先請主治醫師查核（應先請主治醫師確定出院診斷病名），或請病房書記代為轉送給主治醫師，
7. 查房時，主治醫師的 orders 應確實執行（請做筆記），不可遺漏。早上的 orders 不可以拖到下午，下午的 orders 不可拖到隔天。執行 orders 有困難應向上級反應，
8. 所有檢查報告應確實掌握結果並適時向上級反應，
9. 除非必要，儘量不要零星抽血（例如：儘量集中在星期一及四抽血），
10. 每位病人的核心課程學習檢核表，出院前都要收集起來，並完成簽蓋章後交給行政黃小姐，
11. 下班前由總醫師主持病房交班會議，
12. 假日值班每個人要有電腦交班單給值班人員，值班人員中，主治醫師、總醫師或住院醫師至少有一人每日要寫 Progress Note。

## 醫療作業規範與說明

### 教學活動：

1. 主治醫師房教學：是病房每日臨床工作最重要的 Work-place learning 之時段。教學時段內，團隊的主治醫師會先與成員 review chart，至 bedside 訪視檢查病人並與團隊成員討論臨床決定。為使達到最好的學習效果，學員務必於每日主治醫師查房前 pre-round 病人，才能於查房教學時做有深度的討論，
2. 床邊教學：由主治醫師帶領學員做床邊教學，學員記錄當日教學及提問情況，記錄後交至行政人員黃秀珠小姐（分機：3051）存查，
3. 教學門診：由主治醫師帶領學員門診看診技巧。教學門診後，學員應完成教學門診記錄，並繳交給行政人員黃秀珠小姐存查，
4. 晨報會與病例討論：每日上午 8 點於骨科部會議室舉行，
5. 死亡與併發症討論會：討論發生 mortality 或 morbidity 的病例，並著重於下次如何精進臨床治療，以防止或減少 mortality 或 morbidity 的發生，
6. 期刊研討會：著重於疾病診斷、治療之相關醫學期刊的討論。
7. 手術教學：由主治醫師或總醫師帶領，學習手術相關之知識與技巧，並學習手術後病人照護之相關知識。

### 會議說明：

1. 當月第一天為 Orientation, 由總醫師負責，
2. 每天上午 8:00 於骨科部會議室開會，請勿遲到。晨報會討論前一天與當日手術病患，住院醫師必須報告病人主訴、簡單病史、理學檢查、影像發現、診斷、手術治療方式、並加以說明，進行討論，
3. W5 上午為 journal reading, 由主治醫師分派題目後作成 PowerPoint 簡報，
4. 每月最後一週週四上午 8:00 於骨科部會議室召開部務會議並進行死亡與併發症病例討論會，
5. 每月某週四上午 7:30 於放射線部會議室參加聯合討論會，
6. 教學門診由總醫師公佈於佈告欄，請務必準時參加，
7. 晨會結束後，於手術室進行手術教學。

### 病房工作職責說明：

1. 本科成本碼為 305I，
2. 每日晨會前後，各主治醫師帶領住院醫師查房與臨床教學，完成主治醫師交辦之臨床工作，
3. 照顧住院病人，處理患者的病情變化，詳實記載病況與完成入出院病歷。Admission Note 及 General History 要有確實的 Extremities 與 Neurological Examination，
4. 接新病人時必須輸入主治醫師燈號、住院醫師燈號、及 ICD-9-CM 碼，24 小時內完成完整之住院病歷，
5. 值班接新病患應於 4 小時內完成問診及理學檢查，並寫 Acceptance note。有突發狀況時必須寫 on duty note 描述當時病情、檢查及處置，
6. 若有作侵入性檢查或治療需填寫 procedure note，要加註 finding 及後續之觀察處理，
7. 應每日記載病程，以符合病歷審查之要求，每週五須寫 Weekly summary note 描述本週處置大綱，

8. 每天 17:00 前務必將病人狀況輸入電腦確實交班，值班醫師須確實看過交班表並簽名。病況不穩定病患必須特別口頭交班以免徒增值班人員困擾，
9. 指導實習醫學生學習臨床診斷，治療病人及病歷記錄，
10. 值班時需堅守崗位，和實習醫學生共同從事醫療工作。

### 有關交班與簽床

#### 負責主治醫師（上班時間）：

1. 主治醫師下班前巡視危急和新病患，
2. 下班前主治醫師交班，
3. 總醫師督導住院醫師交班（電腦記錄）。

#### 負責主治醫師（下班時間）：

1. 下班時間與假日由原主治醫師負責，
2. 小夜班值班總醫師就交班本查房，
3. 危急、新病患由護理人員同時通知值班住院醫師及主治醫師。

### 病患出院：

1. 主治醫師於前一日說明出院診療計劃並完成大部份手續，
2. 主治醫師於出院日一早巡視後出院。

### 值班範圍：

在骨科專屬病房內，值班休息時必須於指定的病房值班室內。病房值班由總醫師平均分配規劃，目前每位住院醫師以每月 10 班為原則，負責處理骨科病人問題及接新病人；值班時有一線值班總醫師負責支援處理病人問題，若病患有緊急及病危情況或病情出現重大變化時，值班總醫師必須與住院醫師至床邊解釋病情及處理相關醫療問題並通知主治醫師判斷處理。

### 值班規則：

1. 病房交班會議：每天下班前總醫師於病房召開病房交班會議，住院醫師必須將所照顧病患的現況清楚交班，特別是病情危重或會有變化的病人及特殊藥物過敏史，必須詳細鍵入電腦醫師交班作業系統。
2. 病危及緊急情況：值班住院醫師於照顧病患時，若病人病況危急，必須向家屬宣告及發病危通知單時，於向值班總醫師及主治醫師報告後，請值班總醫師至病房協助處理及宣告病危狀況予家屬。
3. 假日主治醫師查房：值班住院醫師於假日值班時，必須跟隨主治醫師與總醫師一同查房，對於主治醫師的醫囑必須確實執行，若有疑問，必須與該醫師聯繫，並將處理情況記載於病歷上。

### 會診制度與醫師間聯絡方式：

1. 會診由該專科主治醫師於規定時間內完成，總醫師可為教學訓練目的先行會診，但診療計劃仍需由會診主治醫師於規定時間內修正與副簽，
2. 完成時間前 4 小時由會診病患之住院醫師提醒會診主治醫師，
3. 遇會診醫師休假，由會診病患之住院醫師請會診科總醫師聯絡代理主治醫師，
4. 會診主治醫師應留下 PHS 及辦公室電話，
5. 會診主治醫師應主動聯絡會診病患之主治醫師，討論較專業的建議診療項目。

### Admission orders 之開立：

根據 The Washington Manual Internship Survival Guide, 2<sup>nd</sup> edition, p.31 的建議開立 admission orders。口訣是 ADCVAAND-ISML。

1. Admit to Drs. VS ○○○ / CR□□□ / I\*\*\* team's service。請於病患 ICD-9 診斷點入，並輸入主治醫師和住院醫師章號。
2. Diagnosis: 寫上主診斷之 ICD-9。
3. Condition: Critical, stable, ... etc.
4. Vitals: 包括要請 nurse check vital signs 的次數，如：  
 check vital signs Q8H 或 qid, bid, every shift, ... etc.
5. Allergies and reactions: 如 no known drug allergy, intolerance to primperan, diclfenic acid( acute urticaria within one hour of intake ), Tegretal ( Steven-Johnson syndrome in 2005/4) ... 等，由電腦病患主畫面之 (J. 輸入/查詢病患過每記錄) 點選。
6. Activity: 如 as tolerable, up to chair, bed rest, bed rest with bedside commode, complete bed rest 等。
7. Nursing: 如 record I/O, record BW 等。
8. Diet: 如 NPO, prudent diabetic diet xxxxKcal/day, low fat/low cholesterol diet, low salt diet 3g/day, low protein diet 0.6 g/kg/day, semi-liquid diet, ground diet, etc. 由開立醫囑中的 (3. 治療) 畫面點選。
9. IV: IV fluid 量 / on heparin lock, 由 (3. 治療) 畫面點選。
10. Special: 如 change dressing QD; hemodialysis every W1、W3、W5; Foley care; CVP care; consult with social work; consult dietitian; consult PT/OT 等。
11. 本次住院由本院藥局發出的藥物開在 (1. 住院用藥) 內。
12. 所有 PRN order 都應在註內說明使用時機 (如 acetaminophen 1 tab Q6H PRN, 註: if headache or fever >38.5oC)
13. 病人自備的藥物要在治療醫囑中註明，medical team 其他人員才知道病人還在同時使用何種藥物。
14. Laboratory: 由電腦醫囑畫面中的 (6. 檢驗部) 及 (8. 各科醫囑) 點選。

### 骨科部治療計劃告知病人及家屬之作業規定：

1. 急診病患入院時：依據醫療法第四十六條第一項規定「醫院實施手術時，應取得病人或配偶、親屬或關係人說明手術原因，手術成功率或可能發生併發症及危險在其同意下，始得為之，但如情況緊急不在此限」。行政院衛生署 76.4.17 衛發醫字第 653846 號函釋「所謂情況緊急係指病況危急，時間不容許病人或其配偶、親屬或關係人之同意，為解救病人性命，醫院可逕予實施必要之手術及麻醉，病人意識不清或無行為能力而無緊急情況者，醫院實行手術仍應取得其配偶、親屬或關係人之同意，始得為之」。
2. 計劃性手術之病患入院時，應由醫師就住院醫療期間，於術前準備所必須檢查的危險性，及可能之併發症向病人或配偶、親屬或關係人說明，在其同意下，始得為之。
3. 計劃性手術之病患手術前：
  - (1). 醫師應就手術之必要性、步驟、風險、成功率、術後併發症，選擇其他治療方式之風險及手術可能預後情況和不進行手術的風險，向病人或配偶、親屬

或關係人說明。

- (2). 關於麻醉及恢復期可能之風險應由麻醉醫師向病患說明。  
術中輸血之可能性及輸血所合併之過敏及感染等併發症應向病患說明在病患同意下始能實行輸血。
  - (3). 如因治療須要必須切除病患肢體或器官組織，務必於術前詳細說明部位及範圍，並於手術同意書及病歷上記載，最好能以照片紀錄。
  - (4). 如術後必須住進加護病房，應由護理人員針對病患術後加護病房環境及身上管路，安排加護病房環境介紹。
  - (5). 整型美容手術應有術前及術後之照片比較。
  - (6). 手術後，醫師應主動向病人或其配偶、親屬或關係人，說明手術發現結果，術後治療計劃，及術後可能之併發症及治療方式。
4. 住院期間任何侵入性檢查或治療，一定要由醫師向病患及其家屬解釋療程及可能之併發症，並取得同意書後始得為之。
  5. 癌症病患住院化學治療時，應由醫師就本次化療之療程及可能之併發症向病患及其家屬解釋，並由護理人員安排衛教。
  6. 病患出院前，醫師應主動向病人及家屬說明出院後傷口照顧，可能遇到的突發狀況及處理方式，並安排回診時間。
  7. 如病患因術後併發症再住院，醫師應主動向病人及家屬說明併發症發生原因，國內外文獻上的發生率，及併發症之治療方式。

#### **骨科部病患持續性醫療照護之作業規定：**

##### **病患入院時：**

由醫師判定患者所罹患疾病屬於可痊癒之急性疾病或需持續照護之疾病。

##### **病患住院期間：**

1. 由護士介紹環境，包括用餐時間，陪伴家屬及訪客規定。
2. 由護士登記緊急聯絡人和聯絡方式。
3. 於病床床頭明顯標示主治醫師、住院醫師和專責護士之姓名。
4. 由主治醫師明白告知檢查及治療計劃，以及可能之出院日期。
5. 由護士給予患者所罹患疾病之衛教單並加以說明。
6. 任何侵入性檢查或治療需由醫師向病人及家屬代表解釋清楚方法及可能併發症，並簽署同意書方得為之。
7. 手術前由負責醫師向病患及家屬解釋手術方式及風險並簽署手術同意書。
8. 手術後由負責醫師向病患及家屬解釋手術發現及結果。
9. 任何侵入性檢查或治療需由兩位醫護人員交互確認患者及項目無誤。
10. 住院醫師每日至少訪視病患兩次。
11. 主治醫師每日至少巡房一次。
12. 病危患者、當日手術患者、以及有特殊情況發生之患者，負責醫師於下班前須與值班醫師交班病情。
13. 假日由值班主治醫師帶領住院醫師巡房。
14. 任何不正常之檢查數據、生命資跡象及患者不適、異常需立即通報負責醫師或值班醫師。
15. 出院前一日告知病患，協助安排出院事宜。

##### **急性疾病病患出院時：**

1. 主動詢問是否需要診斷書。

2. 開立出院帶藥、給予病情摘要。
3. 安排回診時間。
4. 進行衛教、告知可能之突發狀況及處理方式。

**經判定為需持續照顧之病患：**

1. 住院時立即通報社工室、家醫部、追蹤病人病情，於適當時機介入安排出院後居家護理照護，或轉入慢性療養病院。
2. 代為推介適當之社區醫療機構。
3. 協助患者租借生活輔具。
4. 給予相關之病情及檢查摘要，方便安養機構持續照護患者。

## 病歷寫作要點

### 病歷記載原則

1. 完整性 (complete)
2. 正確性 (accurate)
3. 周詳性 (comprehensive)
4. 一致性 (consistent)
5. 易讀性 (legible)
6. 即時性 (timely)
7. 整合性 (integrated)

遵守常用習慣—不使用立可白、不隨便塗改！病歷增刪應以劃線去除，不得塗毀。且應於增刪處簽名或蓋章並加註年、月、日。盡量不要留白讓別人有加減文字的機會！

### 骨科住院病歷記錄(Admission Note)記錄內容

The format for the History and Physical must include the following:

1. Chief complaint in patient's own words
2. History of present illness
3. Past medical history
4. Past surgical history
5. Medicines
6. Allergies
7. Social history
8. Family history
9. Review of systems
10. Physical exam of all systems – with emphasis on range of motion of joints, description of wounds, muscle strength (0/5 – 5/5) and neuro exam.
11. Laboratory results at admission excluding EKG.
12. X-rays – within normal limits or if abnormal, a description of findings of all x-rays, including CT scans, MRI's, tomograms, etc.
13. Diagnosis
14. Suggested plan of treatment
15. Work status – please write clearly with distinct answers

## 住院病歷記錄(Admission Note)範本

**Name:**

**Age:**     years old

**Gender:**

**Marital Status: married/single/divorced/separated**

**Date of Admission:**

**Date of history taking:**

**Hospital Number:**

**Occupation:**

**Chief Complaints:**

[Symptom + Duration (or since when)] in one sentence

例：Limping gait and fever for 3 days.

**Present Illness:**

內容需包含

1. Related past illness and previous hospitalizations
2. The process of illness
3. ER (including other hospital): presentation, Lab findings, management
4. Throughout the whole course of present illness

例：

According to the statement of patient himself, this 14-year-old male was born at term without postnatal problems. His walking was delayed to 2.5 years. Medical treatment till age 14 included mainly observation with several short episodes of physical therapy aimed at stretching contracture at the knees. Two episodes of inhibitive casting were performed at age 10 and 11 with no impact according to the family. He is in grade eight doing well academically and lives on a farm where he is able to do most farm tasks. The family seeks a new opinion because in the last year it has become more difficult for him to walk because his knees rub together to the point of developing contusions from the direct contact. After working on the farm or walking long distances he is having increasing right knee pain. The spine X-ray revealed no evident bony abnormalities.

Throughout the whole course of present illness, there were gait abnormalities, decreased fine motor skills. There were no hip pain, seizure, bowel or bladder problems. His diagnosis is asymmetric diplegia pattern cerebral palsy. The boy and his parents agree that they want him to walk better and to have less knee pain in the right knee as well as decreasing the direct contact from the knees hitting each other during gait.

**Past History: (若無重要疾病之病史請註明)**

1. Denied history of DM (用藥、追蹤院所、固定不固定)

2. Denied history of hypertension (用藥、追蹤院所、固定不固定) or other cardiovascular disorders (用藥、追蹤院所、固定不固定)
3. Denied history of pulmonary TB, COPD or other pulmonary diseases
4. Denied history of liver diseases
5. Denied history of prior surgery

Previous operations: (診斷、手術名稱、手術日期、院所)

**Personal History :**

1. Denied history of smoking
2. Denied history of alcohol drinking
3. Denied history of allergy to food or drugs.
4. Denied history of travelling.

**Family History:**

Non-contributory

**Physical Examinations:**

General

Well-nourished and normal-developed adult

No skin yellowish discoloration

HEENT:

No deformity, no pale conjunctiva, no icteric sclera.

Neck

No stiffness, no limitation of movement, no palpable LN, no carotid bruit, no jugular vein engorgement.

Chest and heart:

Symmetrical and fully expanded chest wall, no wheezing, no rales, no cardiac murmur, no cardiac arrhythmia, irregular HR

Abdomen:

No tenderness, no rebounding pain, no muscle guarding, no hepatosplenomegaly, no palpable mass, normoactive bowel sound.

Back:

No gross deformity, no CV angle knocking pain,

Extremity:

No limitation of movement, no deformity, no peripheral cyanosis, no clubbing finger, no pitting edema.

Digital Examination:

Prostate: smooth, rubbery, no hard nodule, size 3x3cm, normal anal tone, no rectal shelf.

Neurological Examination:

Cranial nerve: intact, DTR: symmetric 2+, Babinski sign: negative, muscle power: symmetric 5 score

Exogenitalia:

No penile lesion, no scrotal swelling, testis: normal size, no tenderness, no

palpable mass, no varicocele.

Laboratory Findings: (檢驗值單位要寫)

Blood routine: Hgb 14.5 gm%, RBC: 3.93 m/cumm, WBC: 12400/cumm, Hematocrit: 45%, Differential count: Neutrophil 82%, lymphocyte 15%, monocyte 3%, basophile 0%, eosinophil 0%, Liver function test: T bil. 1.3 mg/dl, GOT: 54 U/ml, GPT: 62 U/ml, Alk-P: 97 U/ml, rGT: 74 U/ml, amylase: 126 U/ml.

**Orthopaedic condition:**

內容需包含：

1. 病人之病史：病徵發作之型態、從前之發作及恢復、激發病徵的原因、受傷機轉、症狀強度、持續時間、頻率、強度、持續時間、頻率之改變、持續性？周期性？偶發性？症狀部位？有無傳導？休息/活動、姿勢、內臟功能、一日當中的好發時間、生活、經濟上的壓力？
2. Clinical symptom: 痛的性質 (刺悶痠絞脹電麻)、關節鎖死/解鎖 /不穩/彈響/軟腳(giving way)、表皮的變化、ROM 檢查注意角度及質感、
3. Clinical examination: 表皮顏色、質感、疤痕、肢體位置、軟組織外觀、骨骼外型、關節活動時的聲響、局部紅、腫、熱、病人表情及態度、活動的意願、
4. X-ray findings
5. 外院相關資料
6. 相關之 past history or family history

**Impression:**

Cerebral palsy diplegia with adductor tightness and hamstring tightness.

**Plans to do:**

1. Admission routine.
2. Preoperative preparation.
3. Surgical release of adductor longus and gracilis, semitendinosus, semimembranosus, and biceps femoris, bilateral.

## 住院中病程進展病歷(Progress Note)記錄方式

1. 病歷記錄最好採 Problem-Oriented 方式就病人不同的問題逐一分析，各問題之分析宜採 S.O.A.P 記錄：

S (Subjective Data)：自覺徵候，包括病人主訴、症狀、及發病時間、現在病史、過去病史及個人史。

O (Objective Data)：檢查發現，包括診察發現及各種檢查報告。

A (Assessment)：(診斷與病情評估)，包括診斷(Diagnosis)、臆斷(Impression)、病況或症狀(候)評估。

P (Plan)：(治療計劃)，包括各種處置、醫令或處方。

### 紀錄方式

1. 每日於病程紀錄單至少書寫一次病程記錄 (progress note)，內容包括：日期(應註明時、分)、生命徵象、病情進展、臨床診所治療決策等，應以 SOAP 方式書寫

2. 加護病房每日至少書寫兩次病程紀錄

3. 若病情有新變化應隨時加以紀載

4. 若用電腦打字，切勿每日重複，毫無重點。

5. 若有會診紀錄應將會診結果詳實紀錄於病程記錄單。

6. 若有開會討論應將會議結論詳實紀錄於病程記錄單。

7. 每日蓋主治醫師迴診章，並書寫主治醫師交待事項。

8. 主治醫師需每日修改病程記錄並簽名

### 目前 Assessment 錯誤的寫法：

就是只重複寫出住院時之 impression 而沒有評估，如：

1. Sepsis, R/O pneumonia

2. NIDDM, out of control

3. Hypertension

4. History of cervical CA, S/P total hysterectomy, 8 years.

5. Diarrhea, cause to be determined.

### Assessment / plan 的寫法 (例一)：

1. Sepsis, R/O pneumonia: Pneumonia confirmed by CXRs. Third day of cefuroxime 1.5 gm, q8h. WBC decreased. Clearly improving with less cough and fever.

2. To continue the same Rx. For 6-7 days.

3. NIDDM: Sugar level is under control

4. Hypertension: on losartan 50 mg, qd. Under control.

5. Hx of cervical CA: checked by Gynecologist. No signs of recurrence.

6. Diarrhea has stopped 3 days after admission. Stool culture (-), cause unknown; related to the pneumonia?

7. 隨期間而會逐漸改善的治療，如抗生素、手術後、及其他大部分處理，應該寫今天是第幾天的治療。

### Assessment / plan 的寫法 (例二)：

1. High fever: Still febrile. All cultures: no growth. 5 days of empiric Clarithromycin

500 mg, bid. Does not seem to be improving. WBC still around 10k. May be viral infection. Will D/C the antibiotic and observe. To check the report of influenza, parainfluenza virus antibodies. Since renal function is worsening, will check for Hantavirus and Leptospira antibodies. No jaundice.

2. Vomited twice yesterday. No diarrhea. No meningeal signs. Cause not clear. To continue observation.

#### 其他應紀錄事項：

1. 檢驗、抽血、細菌培養和藥物敏感度
2. 結果可統一抄錄於病程記錄單的左側，
3. 字跡要工整
4. 特殊檢查：Indications
5. 如 CT-MRI 等，安排時需在病歷上註明 indication
6. 影像結果必須統一繪圖或列印於病程記錄單
7. 並標明結果與發現及治療計劃

#### 貴重藥品：

貴重藥品:第三線以上(包括第三線)抗生素、Albumin 及其他健保限制藥品，務必在病程記錄單寫明 indication 或 culture result。並於 TPR sheet 上註明。

#### 侵襲性醫療：

施行侵襲性醫療(如 lumbar puncture、tapping、CVP、intubation、CRP 等) 除緊急情況外，必須簽具同意書及 procedure note 於病程記錄單上，務必清楚記錄 indication、complication、result 以及執行的日、時、分。

#### On/Off-service/transfer note：

交班應書寫 on/off-service note; 轉其他病房或加護病房應書寫 off-service/transfer note，清楚交代治療情形、後續計畫、及特殊注意事項。

#### Weekly summary note：

1. 已住超過一週之病人，應於每星期五書寫 weekly summary，內容含 brief history 及 problem list。
2. 家屬及有關人員的反映、希望和意見(必要時可請家屬簽字，並註明與患者關係及簽字日期)
3. 由於醫師工作忙碌，病情變化快，每週摘記可以幫助醫師瞭解病情進展情形(過去一週做了什麼處置,病情及治療反應如何)，並計劃下星期所必需之檢查或治療，也幫助值班醫師瞭解病情。

#### 醫學法律倫理於臨床實務之落實及寫作要點

##### 知情同意 (住院初步診療計劃書之說明與簽署)：

1. 充分告知 (檢查或處置前之說明與同意書之簽署)
2. 決定能力 (手術前之說明及同意書之簽署)
3. 出於自願 (尊重自主)

4. 病情之告知、治療處置（包括替代療法）、預後之告知及出院計劃
5. 告知實情（壞消息）面臨之困境

#### 隱私與守密（病史詢問及檢查之隱私維護）：

1. 保護隱私（保護門診病人隱私，不在公共場所談論病情）
2. 病情守密（病情告知他人須取得病人同意）
3. 病歷管理（病歷複印須符合規定）

#### 病人利益原則：

1. 以病人利益為優先考量
2. 醫療照護團隊合作之呈現，是以病人為中心

#### DNR 之簽立與執行：

1. 安寧緩和醫療
2. 無效醫療之確立
3. 不予急救醫囑之執行

#### 醫法倫（IDP）寫作格式

記載「醫學倫理與法律」的討論。其病歷記錄方式，有下列建議，並提供幾個範例作為參考：

#### 建議使用 IDP（Issue, Discussion, Planning）三段論述的方式

1. Issue：關於該個案之醫學倫理與法律的爭議點。臨床上可能面臨的爭議點如下：病患自主權、告知同意、病患的決定能力、病患的自願、代理決定、告知病患實情、守密、兒童的醫療決定、研究倫理、安樂死、臨終生命照護、自動出院、孕婦與胎兒利益衝突、資源分配、基因檢測與遺傳的爭議…等。
2. Discussion：針對該特定個案，對爭議點進行討論。
  - (1). 討論的方式可以用對談的型態，將討論的重點加以整理，以專業的知識診斷，將情況用淺顯易懂的話語告知家屬及病患，解答病患及家屬心中的疑問。例如：「醫護人員與病患之對談」、「醫護人員與病患家屬之對談」、「主治醫師與住院醫師對談」。
  - (2). 也可以由不同的倫理角度出發，來思考該爭議點，例如：以病患的自主權出發、考慮病患的最佳利益、考慮社會經濟的整體利益…等。
  - (3). 告知內容須把握五項原則：
    - 甲、診斷結果
    - 乙、治療的方式與過程
    - 丙、可能產生的合併症
    - 丁、預後情況
    - 戊、是否有其他治療方式的選擇
3. Planning：在經過討論後，針對該議題決定如何處理。

#### 範例

Issue：請家屬代理決定作氣管切管事宜。

Discussion：

主治醫師：由於病患的父親已中風，意識不清，且痰液無法自咳，故必須接受氣

切手術，以利於日後照顧。

家屬 A：我們不願意做氣切手術，不願意讓父親再接受任何的痛苦。

主治醫師：若不接受氣切手術，可能就要一直有氣管內管維持呼吸道通暢，而氣管內管會有堵塞的危險，且換氣管內管時相當危險。

家屬 A：我再和我母親商量好了。

Plan：安排下次與病患之配偶與兒子晤談。

家屬簽名（視情況而定）

主治醫師附簽／住院醫師簽名

## **實證醫學寫作要點**

### **證據醫學包含五個步驟**

1. 問一個可以回答問題 (ask a clinical question)  
Question components (PICO)  
What type of participants ?  
What type of intervention/exposure ?  
What type of comparison ?  
What type of outcomes ?
2. 尋找最佳的文獻證據 (search evidences)
3. 對文獻進行嚴格評讀 (critical appraisal)  
Critical Appraisal (V.I.P.) Are the results of the article valid ? (VALIDITY)  
What are the results? (IMPORTANCE)  
Will the results help me in caring for my patients? (PRACTICE)
4. 應用在個案患者身上 (translated into actions)
5. 對以上四點進行稽核 (evaluate our 1-4 performances)

### **文獻證據等級 Oxford Centre for EBM Levels of Evidence (2001-5)**

Ia : SR (with homogeneity) of RCTs.

Ib: Individual RCT (with narrow confidence interval).

IIa: SR (with homogeneity) of cohort studies

IIb: Individual cohort study (low quality RCT; <80% follow-up)

IIIa: SR (with homogeneity) of case-control studies.

IIIb: Individual case-control study.

IV: Case-series (poor quality cohort and case-control studies).

V: Expert opinion without explicit critical appraisal, or based on physiology, bench research or “first principles”

## 骨科手術記錄(Operation Note)範本

手術日期及時間: 87年3月23日, AM 8:30

手術前診斷: Developmental dysplasia of hip (DDH), right.

手術後診斷: DDH of right hip, reducible but unstable

手術醫師:

主刀者: VS 張維寧

第一助手: R4 △△△

第二助手: R1△△△

術前用藥:

Cefazolin 500 mg i.v. stat. 30 minutes before surgical incision for prophylaxis.

麻醉部位: 全身(全身、半身、區域、局部)

麻醉方式: Endotracheal general anesthesia (如 endotracheal general anesthesia, IV general anesthesia, epidural anesthesia, spinal anesthesia, local infiltration anesthesia, nerve block anesthesia, etc 若骨科醫師執行局部麻醉需列出麻醉用藥)

麻醉醫師: Chief 劉康

手術適應症:

1. Dislocated right hip joint with predicted huge leg length discrepancy, limping gait, and early osteoarthritis of right hip.
2. Failed closed reduction.

手術名稱:

Open reduction, release of adductor longus tendon and iliopsoas tendon, excision of ligamentum teres, removal of acetabulum pulvinar fibrofatty tissue, radial incision of inverted limbus, right hip capsulorrhaphy, and Salter's innominate osteotomy, Immobilization with hip spica cast

傷口類別: 清潔傷口(分清潔、清潔污染、污染、穢等四級)

手術所見: 描述時以巨觀可見之變化為主, 例如關節炎程度及位置、腫瘤的描述、關節鏡檢的變化、有相片更佳。若為 CRIF 等手術, 可使用術中 x 光檢查作參考

1. Right acetabular dysplasia with acetabular index: Rt: 35°, Lt: 25°.
2. The right hip was reducible under GA, but unstable unless in extreme position.
3. Superolateral dislocation of femoral head with elongated ligamentum teres, the acetabulum was filled with pulvinar fibrofatty tissue, the transverse ligament displaced upward, the limbus was inverted, and the medial joint capsule was tight.
4. Tight iliopsoas and adductor longus tendon while hip in reduction position.

手術內容:

1. Under GA, the patient was put in supine position with a sand bag under lower back. The perineal region was taped with a strip of waterproof tape. The skin over abdomen up to lower costal margin, perineum, and both lower legs was prepared and draped as usual. (病患的準備流程，如麻醉方式、刷洗及消毒範圍、病患的姿勢等)
2. Percutaneous adductor longus tenotomy was performed.
3. A modified Smith-Peterson curvilinear incision was made from iliac crest to mid-inguinal region, about 7cm in length. (手術刀口位置、長度等)
4. After retracting the lateral femoral cutaneous nerve medially, the aponeurosis between tensor fascia lata muscle and sartorius muscle was divided. Dissection was carried through sartorius-tensor interval. The rectus muscle forming the floor of this interval was divided from origin and retracted distally with a stay suture. (手術中 approach 所經過之解剖構造，如何保護或向何方向牽拉)
5. Sharp bisection was made over apophysis of iliac bone, then the thick cartilage cap and periosteum was elevated until the sciatic notch was seen. (手術中的 dissection 方式，可說明所使用的特殊用具)
6. The tendon part of iliopsoas muscle was transected.
7. The hip joint capsule was identified and carefully dissected from surrounding tissue, especially the superolateral part, to reduce the tethering effect of the capsule.
8. A T-shaped capsulotomy was done, the angles of the capsule flap were retracted with retention sutures, the operative findings were as afore-mentioned.
9. The ligamentum teres and the transverse ligament were excised, the pulvinar fibrofatty tissue was curetted, and the femoral head was reduced smoothly.
10. The limbus was incised radially with 4 incisions.
11. Salter's innominate osteotomy was done at 1cm superior to rectus femoris origin between ASIS and AIIS, directed toward sciatic notch with an oscillating saw. The distal fragment of osteotomy was pulled anterior and laterally with a towel clip. The bone graft was harvested from iliac crest and placed between two valves of the osteotomy. The bone graft was fixed with two parallel #1.6 smooth pins. (所用的內固定或人工關節之樣式、種類、廠牌、大小等)
12. Capsulorrhaphy was done to close the redundant joint capsule, the excessive capsular tissue was excised. (手術中對骨骼、軟組織的處理方式，例如人工膝關節置換術對股骨、脛骨、髌骨的處理，對韌帶、關節囊、神經、血管的處理等)
13. The rectus femoris tendon and apophysis of iliac bone were repaired with 1-0 Dexon sutures, the aponeurosis was approximated. The skin was closed in two layers with subcuticle method. No drainage tube was retained in the wound. (手術傷口的清潔及縫合等)
14. A one and one half hip spica cast was applied with both hips in abduction 30

degrees, flexion 30 degrees, and neutral rotation position.

15.Reduction was confirmed with an image intensifier.

16.The blood loss measured about 50ml in amount and no blood was transfused. The whole course was smooth and the patient tolerated well, she was sent to POR with stable condition. (出血及輸血，手術中不穩定情況之紀錄)

簽名○○○

## 病歷評鑑標準-優良

### 病歷評鑑標準

#### ★★住院醫師部分

優良

#### ※住院紀錄(Admission record)：

1. 首頁紀錄完整詳細
2. Special chart 登錄完整
3. TPR Chart 紀錄完整並標示詳明
4. Admission note 病患基本資料完整
5. 病史紀錄完整詳明
6. 過敏史紀錄完整詳實並標示詳明
7. 理學檢查紀錄詳實(包含身高、體重)
8. 影像資料登錄完整並判讀
9. 診斷與主訴契合無誤

左欄問題 和 右欄處置皆有填寫且內容實在
有登錄,且標示出不正常 data
標明各種處置(B/C,CVP, Endo), image finding 等內容實在,可從 TPR chart 得知病情
基本資料外,還有職業和社經地位(富裕,小康...)
詳述症狀,求醫經過,檢查,診斷,治療和療效
過敏藥物,時間,過敏反應,處置與病程
PE 與主訴和病史有一致性,敘述清楚,不只有+-
詳細說明影像資料 finding
診斷簡潔明瞭,切合主訴

#### ※病程紀錄(Progress note)：

1. Acceptance Note 完整適宜
2. 每日皆有紀錄完整
3. Weekly Summary Note 完整(必評!!)
4. Stat Order 紀錄詳實
5. 重要 Procedure 有特殊紀錄
6. 抗生素使用適當(說明使用理由)

主訴,病史 PE,診斷,治療計劃有一致性
禮拜一到日皆有記錄,且內容詳實
有 summary note,且標明重點,簡單明瞭
清楚明瞭
執行名稱,理由,執行是否順利,注意事項
標明使用抗生素原因,劑量,注意哪些副作用或併發症

#### ★★主治醫師部分 (有者打 V, 無者打 X)

1. 首頁紀錄有修正( )、副簽( )
2. 親自撰寫住院規劃、內容完整  
並有病人或家屬簽名(必評!!)
3. Admission Note 有修正( )、副簽( )
4. Acceptance Note 有修正( )、副簽( )
5. 24 小時內有主治醫師書寫之病歷紀錄
6. Progress Note 有修正( )、副簽( )
7. 主治醫師至少每週寫一次病情評論

副簽加修正
有書寫且內容明確
副簽加充分修正
副簽加充分修正
有書寫且重點明確
副簽加充分修正
有書寫且內容明確實在

**病歷評鑑標準-合格**

★★住院醫師部分

合格

※住院紀錄(Admission record)：

1. 首頁紀錄完整詳細
2. Special chart 登錄完整
3. TPR Chart 紀錄完整並標示詳明
4. Admission note 病患基本資料完整
5. 病史紀錄完整詳明
6. 過敏史紀錄完整詳實並標示詳明
7. 理學檢查紀錄詳實(包含身高、體重)
8. 影像資料登錄完整並判讀
9. 診斷與主訴契合無誤

兩欄 皆有填寫
有登錄
僅寫簡單處置
基本資料
主訴及病史有描述
僅寫過敏藥物+/-反應
PE 完整,有一致性
標明出異常處
兩者相符

※病程紀錄(Progress note)：

1. Acceptance Note 完整適宜
2. 每日皆有紀錄完整
3. Weekly Summary Note 完整(必評！！)
4. Stat Order 紀錄詳實
5. 重要 Procedure 有特殊紀錄
6. 抗生素使用適當(說明使用理由)

主訴,診斷,治療計劃適當
禮拜一到日皆有記錄
有 summary note
有記錄
有記錄
說明使用原因,未用 抗生素請打合格

★★主治醫師部分 (有者打 V，無者打 X)

1. 首頁紀錄有修正( )、副簽( )
2. 親自撰寫住院規劃、內容完整  
並有病人或家屬簽名(必評！！)
3. Admission Note 有修正( )、副簽( )
4. Acceptance Note 有修正( )、副簽( )
5. 24 小時內有主治醫師書寫之病歷紀錄
6. Progress Note 有修正( )、副簽( )
7. 主治醫師至少每週寫一次病情評論

有副簽
有書寫和家屬簽名
有副簽加修正
有副簽加修正
有書寫
有副簽加修正
有書寫

**病歷評鑑標準-不合格**

★★住院醫師部分

不合格

※住院紀錄(Admission record)：

1. 首頁紀錄完整詳細
2. Special chart 登錄完整
3. TPR Chart 紀錄完整並標示詳明
4. Admission note 病患基本資料完整
5. 病史紀錄完整詳明
6. 過敏史紀錄完整詳實並標示詳明
7. 理學檢查紀錄詳實(包含身高、體重)
8. 影像資料登錄完整並判讀
9. 診斷與主訴契合無誤

沒寫或只寫一欄
沒登錄
沒紀錄
有缺漏
不完整
沒寫
理學檢查與病史不合
沒有影像,或無說明
兩者不符

※病程紀錄(Progress note)：

1. Acceptance Note 完整適宜
2. 每日皆有紀錄完整
3. Weekly Summary Note 完整(必評！！)
4. Stat Order 紀錄詳實
5. 重要 Procedure 有特殊紀錄
6. 抗生素使用適當(說明使用理由)

內容草率無關聯性
禮拜一到日有缺漏
無 summary note
無記錄
無記錄
無說明

★★主治醫師部分 (有者打 V，無者打 X)

1. 首頁紀錄有修正( )、副簽( )
2. 親自撰寫住院規劃、內容完整  
並有病人或家屬簽名(必評！！)
3. Admission Note 有修正( )、副簽( )
4. Acceptance Note 有修正( )、副簽( )
5. 24 小時內有主治醫師書寫之病歷紀錄
6. Progress Note 有修正( )、副簽( )
7. 主治醫師至少每週寫一次病情評論

無
只有醫師或家屬簽名
只簽名,但 R 寫得優良可只簽名
此時就算合格
無
只有簽名或副簽
無

# 骨科住院醫師學習護照

住院醫師姓名：

學習期間： 年 月

手術名稱	日期/ 病歷號/勾選主刀或第一、二助手/指導者						
石膏固定技術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
局部或關節內注射技術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
截肢手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
Proximal femur fracture 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
Femur or tibia shaft fracture 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						

Fracture around knee 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
Ankle or foot fracture 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
Pediatric fracture 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
Upper limb 骨折 閉鎖式 or 開放式復位手術, Hand trauma 手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
Spine fracture 閉鎖式 or 開放式復位手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
其他 trauma 手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
	日期						
	病歷號						
	主刀						
	第一助手						
第二助手							
指導者							

半髖關節置換手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
全髖關節置換手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
膝關節置換手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
HIVD 手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
Spinal stenosis or instability 手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
其他脊椎手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						

Knee ligament reconstruction	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
Shoulder surgery	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
關節鏡檢查及治療，或其他運動傷害手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
兒童骨科手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
踝足疾病手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						
手外科手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						

其他手術	日期						
	病歷號						
	主刀						
	第一助手						
	第二助手						
	指導者						

讀書或研究報告

日期	主題	指導者

科主任簽章：

部主任簽章：

# 常見骨科疾病之診治指引

## 小兒骨科與兒童骨折分類

### Classifications of physeal injury:

1. Salter Harris (1963): 5 types of physeal injuries, 5<sup>th</sup> type: compression injury of physis.
2. Mercer Rang (1969): S-H Type 6.
3. Ogden (1981): 9 types and 11 subtypes, total 20 types

### Osteology:

#### Shoulder region:

- Head of humerus: 1 month
- Greater tuberosity: 1 y
- Lesser tuberosity: 3 y
- Clavicle (Membranous ): 1st bone to ossify

#### Elbow region:

- Capitellum 3 m
- Medial epicondyle 6 y
- Trochlear 9 y
- Lateral epicondyle 12 y
- Radial head 5 y
- Olecranon 10 y

#### Wrist region:

- Distal radius 6 m
- Distal ulnar 6 y

#### Pelvis:

##### *Primary ossification centers*

Ilium 2nd fetal month

Ischium 3rd fetal month

Pubis 4th fetal month

Ischium & Pubis Fuse inferiorly at 6 to 7 years

All 3 centres Fuse at 16 - 18 years at the triradiate cartilage

##### *Secondary ossification centres*

Iliac crest appear 13 - fuse 15

Inf.Iliac Spine appear 14 - fuse 16

Ischial tuberosity appear 15 - fuse 19

Femur:

*Secondary ossification centres*

Head 6 months

Greater trochanter 4 years

Lesser trochanter 8 years

After puberty fusion with the shaft of femur in the order of 3 2 1

Shaft of femur 8th week in utero, 2nd bone to ossify after clavicle

Distal femur 7th month in utero, fuses with shaft at 20 years

Tibia:

Proximal tibia 1 month after birth

Tibial shaft (POC) 8th fetal week

Distal tibia 1 year old

Tubercle Puberty

Fibula:

Proximal fibula 4 years

Fibula shaft (POC) 8th fetal week

Distal fibula 1 year old

**Monteggia Fracture Dislocations (BADO)**

Type 1:

- (1). Anterior radial head dislocation
- (2). # ulnar shaft at any level with anterior angulation

Type 2:

- (1). Posterior or posterolateral radial head dislocation
- (2). # ulnar shaft with posterior angulation

Type 3:

- (1). Lateral or anterolateral radial head dislocation
- (2). # of the ulnar metaphysis with lateral angulation

Type 4:

- (1). Anterior radial head dislocation
- (2). # of proximal radius & ulna at the same level

**Monteggia "equivalent" fractures:**

1. Isolated radial head dislocation

2. Fracture of proximal ulna with # radial neck
3. Both bone proximal 1/3 # - Radial # more proximal than ulnar #

### **Galeazzi Fracture Dislocation:**

Fracture of the distal shaft radius + Dislocation of distal radioulnar joint

### **Supracondylar Fracture of the Humerus (Gartland)**

Flexion or Extension fractures:

Type I: Undisplaced

Type II: Angulated fractures with one intact cortex

Type III: Completely displaced fractures

Baumann's Angle (AP view): Angle between longitudinal axis of humeral shaft & physis of the lateral condyle is approximately  $20^{\circ}$

Humerotrochlear angle (Lateral view): Angle between the longitudinal axis of the humerus & the axis of the condyles is approximately  $40^{\circ}$

### **Lateral & Medial Humeral Condylar Fracture (Milch)**

Type I: Usually stable - # line through the trochlear groove - # of the smaller, outer margin of the humeral condyle - SH type IV

Type II: usually unstable injury - # through the trochlear sulcus which involves the trochlear ridge, a bony prominence just lateral to the trochlear sulcus, which provides osseous stability to the elbow joint - SH type II epiphyseal #

### **Lateral condylar fracture displacement staging (Jacob 1975)**

Stage I: Articular surface intact: casting

Stage II: Articular surface disrupted: gray zone

Stage III: Displaced and rotated: ORIF

### **Fractures of the Humeral Head (Neer & Horowitz)**

mainly SH I or II

Grade I: < 5mm displacement

Grade II: Displacement up to 1/3 width of the shaft

Grade III: Up to 2/3 width

Grade IV: > 2/3

### **Classification of Children Hip Fractures (Dilbet)**

Type I: Transepiphyseal<sup>4</sup>

Type II: Transcervical<sup>1</sup>

Type III: Cervicotrochanteric (basal)<sup>2</sup>

Type IV: Intertrochanteric (perthrochanteric)<sup>3</sup>

### **Classification of Children Hip Fractures (Dilbet)**

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### **Classification of Tibial Intercondylar eminence or Tibial Spine fractures: (Meyers & McKeever)**

Based on lateral X-ray of the knee:

Type I: Minimally displaced

Type II: 1/3 or 1/2 of the tibial eminence is elevated, hinged on its posterior insertion

Type III: completely displaced

Type III+: displaced + Rotated

### **Triplane Ankle Fractures in Children**

Caused by external rotational force

3 fragments triplane # = combination of SH II & III #

2 fragments triplane # = SH IV #

### **Epiphyseal fusion of distal tibia:**

Girls 15, boys 17 years of age. It begins from center, progress to medial then posterior.

Antero-lateral portion of the plate fuses last

### **Tillaux Fracture**

Avulsion of anterolateral segment of distal tibial epiphyseal plate.

Occurs after medial epiphyseal plate had closed but before lateral part closes

SH III injury

## 兒童及成人骨折分類

### **Clavicle (Allman)**

Group 1 - Middle third fracture

Group 2 - Lateral third

Group 3 - Medial third

### **Neer (Lateral Clavicle)**

Type 1 - Coraco Clavicular ligament intact

Type 2 – C-C ligament torn & displacement of medial fragment

Type 3 - Fractures involving the A-C joint

### **A-C Joint (Rockwood)**

Type 1 -Sprained

Type 2 -Subluxed

Type 3 -Superior Dislocation

Type 4 -Superior/ Posterior dislocation

Type 5 - Severe superior dislocation

Type 6 - Severe Inferior dislocation

### **Scapula**

Anatomical classification: Body, Glenoid Rim or Fossa, Anatomical Neck, Surgical Neck, Acromion, Coracoid Process, Spine

### **Proximal Humerus (Neer)**

Two part / Three part / Four part / Head splitting / Impression

Following parts are displaced >5mms, or angulated >45<sup>0</sup> and can be associated with anterior or posterior dislocations

1. Anatomical neck
2. Surgical neck
3. Greater tuberosity segment
4. Lesser tuberosity segment

### **Cofield & Irving Classification of Shoulder Dislocations**

1. Anterior
2. Posterior
3. Multidirectional

Each can be subdivided according to the following parameters:

- (1). Degree: Subluxation Dislocation
- (2). Cause: Microtrauma Macrotrauma Atraumatic

- (3). Type: Acute Recurrent Voluntary Involuntary
- (4). Primary direction: (multidirectional instability only): Anterior inferior Posterior inferior All directions

### **Distal Humerus**

Condylar: MILCH - Medial or lateral

Type 1: Smaller outer margin of articular surface - < 30% (stable)

Type 2: Larger fragment - > 30% (unstable)

Capitellum Fracture:

Type 1: Hahn-Steinthal - articular surface with large amount of subchondral & cancellous bone

Type 2: Kocher-Lorenz - articular slice # of capitellum with little underlying bone

Type 3: Crushed capitellum

### **Elbow Dislocations**

Dislocation of radius & ulna:

- 1. Posterior
  - (1). Posteromedial
  - (2). Posterolateral
- 2. Anterior
- 3. Medial
- 4. Lateral
- 5. Divergent dislocation with superior R/U joint disruption
  - (1). Anteroposterior
  - (2). Mediolateral

Isolated dislocation of radius:

- 1. Anterior
- 2. Posterolateral

Isolated dislocation of ulna:

- 1. Anterior
- 2. Posterior

### **Monteggia Fracture Dislocation (Bado classification)**

Type 1:

- (a) Anterior Dislocation of Radius
- (b) Anterior Angulation of proximal or mid third of Ulna

Type 2:

- (a) Posterior dislocation of Radius
- (b) Posterior Angulation of proximal / mid third of Ulna

Type 3:

- (a) Lateral or Ant-Lat dislocation Radius
- (b) Ulna # just distal to coracoid process

Type 4:

- (a) # of radial head or neck with dislocation
- (b) # of proximal or middle third of Ulna

### **Radial Head (Mason's classification)**

Grade 1: Undisplaced segmental #

Grade 2: Displaced segmental #

Grade 3: Comminuted #

Grade 4: Grade 3 with associated elbow dislocation

### **Scaphoid**

Type A (Acute stable fractures)

A1 tubercle fractures

A2 undisplaced waist #

Type B (Acute unstable fractures)

B1 oblique distal third #

B2 displaced waist fractures

B3 proximal pole fractures

B4 # dislocation of carpus

B5 comminuted fractures

Type C (Delayed union)

Type D (Established non-union)

D1 fibrous non-union

D2 sclerotic non-union (pseudoarthrosis)

### **Radial styloid fractures**

Also known as

Chauffeur's #

Hutchinson's #

Scaphoid impression #

### **Ulnar styloid fractures**

Associated with TFCC

## **Thoracolumbar Spine Injuries**

### **Compression fracture**

- A. both endplate #
- B. upper endplate #
- C. lower endplate #
- D. no end plate # (osteoporosis)

### **Burst fracture**

- A. both endplate #
- B. upper endplate #
- C. lower endplate #
- D. Burst rotation
- E. Lateral flexion burst

### **Seat Belt fracture**

- A. 1 level ligament
- B. 1 level bony (chance #)
- C. 2 level ligament
- D. 2 level bony

### **Fracture Dislocation**

- A. Flexion rotation
- B. Shear - anterior/posterior
- C. Flexion distraction - similar to seat belt but with dislocation/subluxation

### **Denis's Division of Spinal Columns**

- (1) Anterior column - Anterior 2/3 of vertebral body including anterior longitudinal ligament - corresponding annulus fibrosus & nucleus pulposus
- (2) Middle column - Posterior 1/3 of vertebral body including posterior longitudinal ligament corresponding annulus fibrosus & nucleus pulposus
- (3) Posterior column – Ligaments: Supraspinous & interspinous ligaments / Ligamentum flavum / Capsular ligaments  
Bony: Pedicles / Facet joints / Laminae / Spinous processes

### **Pelvic Fracture (Tile 1988)**

Type A: Stable

A1: # of pelvis not involving the ring

A2: Minimally displaced # of the ring

Type B: Rotationally unstable, vertically stable

B1: Open book

B2: Lateral compression (Ipsilateral)

B3: Lateral compression (Contralateral, bucket handle)

Type C: Rotationally and vertically unstable

C1: Unilateral

C2: Bilateral

C3: Associated with acetabular #

### **Acetabular Fracture (Letournel)**

TYPE A: Partial articular one column

A1-Posterior wall

A2-Posterior column

A3-Anterior wall and/or anterior column

TYPE B: Partial articular transverse oriented with portion of the roof attached to intact ileum

B1-Transverse + posterior wall

B2-'T' types

B3-Anterior with posterior hemitransverse

TYPE C: Complete articular, both column "the floating acetabulum"

C1-Both column- (high variety)

C2-Both column- (low variety)

C3-Both column-anterior fracture enters the sacroiliac joint

### **Fracture & Posterior Dislocation of the Hip (Thompson & Epstein, 1973)**

Type I: Dislocation with or without minor acetabular #

Type II: Dislocation with a large posterior fragment. Unstable after reduction

Type III: Dislocation with severe comminuted posterior lip

Type IV: Dislocation with # of the acetabular floor

Type V: Dislocation with # of femoral head

### **Subclassification by Pipkin of femoral head fracture dislocation (Type V)**

Type I: Head # caudal to the fovea capitis femoris

Type II: Head # cephalic to the fovea capitis femoris

Type III: Type I or II associated with # of the femoral neck

Type IV: Type I, II or III associated with an acetabular #

### **Anterior Dislocation of the Hip (DeLee)**

Type I Superior

(Ia) No associated #

(Ib) Femoral head #

(Ic) Acetabular #

Type II Inferior

(IIa) No associated #

(IIb) Femoral head #

### **Intertrochanteric Fractures (Boyd & Griffin)**

Extracapsular part of the neck to a point 5cm distal to the lesser trochanter

Type I: Along intertrochanteric line

Type II: Comminuted intertrochanteric fracture

Type III: Basically subtrochanteric fracture

Type IV: Fractures of the trochanteric region & proximal shaft # in at least 2 planes

### **AO (Muller) classification of Supracondylar Fractures**

Type A: Extra-articular:

A1 - Supracondylar not involving the joint

A2 - 3 part with butterfly fragment

A3 - Comminuted supracondylar #

Type B: Partial articular:

B1 - Condylar # of medial or lat side

B2 - Condylar # extending into intercondylar notch medial or lateral

B3 - Shear # of post part of condyle on lateral view

Type C: Intra-articular

C1 Y shaped #

C2 Y shaped # with extra-articular comminution.

C3 Y shaped # with comminution at the joint line

### **Tibial Plateau Fractures**

Schatzker's modification, Originally described by Hohl & Moore

Type I: Pure split # lateral side

Type II: Split with depression - lateral side

Type III: Pure central depression - Lateral condyle

Type IV: Fractures of medial condyle

Type V: Bicondylar fractures Continuity of metaphysis & diaphysis maintained

Type VI: Dissociation of metaphysis & diaphysis in addition to plateau #

### **Ankle Fractures**

#### **Lauge-Hansen classification**

- 1st word indicate the position of foot at the time of injury

- 2nd word defines the direction of force applied to the foot

- Further subclassified by the stages of severity (1 to 4) according to the structures involved

1. Supination external rotation (SER)
2. Supination adduction rotation (SAR)
3. Pronation external rotation (PER)
4. Pronation abduction (PA)
5. Pronation dorsiflexion (PD)

#### Weber A/O classification

Type A: # fibula below the joint line

Type B: # at the syndesmosis

Type C: # proximal to the ankle joint

#### **Talar Neck Fracture (Hawkins)**

Type I: Undisplaced

Type II: Displaced # subluxation or dislocation of subtalar joint ankle joint normal

Type III: # with dislocation of body of talus from both subtalar & ankle joints

Type IV: # with complete dislocation of subtalar joint / ankle joint & Talonavicular joint

#### **Fracture of Lateral Process of Talus (Hawkins)**

Intraarticular # due to forced dorsiflexion on inverted heel. Best visualised: AP & Lateral 150 IR views in plantar flexion / Tomograms / CT

Type I: Minimal displacement involving talocalcaneal joint

Type II: Type I + Talofibula joint

Type III: Comminuted #

#### **Talar Body Fracture (Hawkins)**

Type I: Osteochondral #

Type II: Coronal, sagittal or horizontal # of body

Type III: Posterior process #

Type IV: Lateral process #

Type V: Crush # of body

#### **Type I Hawkins subclassification of Talar Dome Fracture (Berndt & Harty)**

Stage I: A small area of compression of subchondral bone

Stage II: A small, partly detached osteochondral fragment

Stage III: A completely detached undisplaced osteochondral fragment

Stage IV: A displaced osteochondral fragment in the joint

### **Calcaneal Fractures**

- (1) Extraarticular fractures - 25%
  - (a) Tuberosity fractures: Posterior superior # Posterior inferior #
  - (b) Anterior process #: Avulsion # Compression #
  - (c) Sustentaculum tali # :
  - (d) Body extraarticular #
- (2) Intraarticular fractures - Classification by
  - Essex Lopresti
  - Sanders
  - Eastwood / Kenwright

### **Intra-articular Calcaneal Fractures**

- (1) Essex-Lopresti - 2 patterns of secondary #
  - (a) Tongue type
  - (b) Joint depression type
- (2) Eastwood / Kenwright et al JBJS 1993 75B (2):183 of 3 part fractures
  - Type I: The lateral wall is formed by the lateral joint fragment
  - Type II: The lateral wall is formed by the lateral joint fragment & body fragment
  - Type III: The lateral wall is formed by the apparently intact lateral wall of the body fragment

### **Midfoot Injuries**

- (1) Proximal articulation - Navicular/Cuboid - Chopart joint
- (2) Distal articulation - 3 cuneiforms (medial, middle & lateral)/ Cuboid - Lisfranc joint

### **Midtarsal Dislocation (Chopart)**

- (1) Medial
- (2) Lateral
- (3) Plantar

### **Classification of Lisfranc Fractures (Hardcastle)**

- Type A: Homolateral  
Type B: Homolateral incomplete  
Type C: Divergent displacement

### **Open Fracture: Gustillo & Anderson (1976 revised 1984)**

Type I: Clean wound < 1cm

Type II: Wound > 1cm without extensive soft tissue damage

Type III:

    IIIA: Extensive soft tissue laceration or flaps; but maintained adequate soft tissue coverage of bones

    IIIB: Extensive soft tissue loss, periosteal stripping & bone exposure

    IIIC: Open # with arterial injury

Type IV: Replantation

**Incidence of wound infection in open fractures:**

Type I 0 - 2%

Type II 2 - 7%

Type IIIA 7%

Type IIIB 10 - 50%

Type IIIC 25 - 50%

    (50% amputation rate)

## **Trauma scoring**

### **Mangled Extremity Severity Score (MESS)**

Four Categories

#### A. Skeletal/soft-tissue injury

Low energy = 1

Medium energy = 2

High energy = 3

Very high energy = 4

#### B. Limb ischaemia

Pulse reduced, perfusion normal = 1

Pulses, parenthesis, diminished capillary refill = 2

Cool, paralysed, insensate, numb = 3

#### C. Shock

Systolic BP always >90 mm Hg = 0

Hypotensive transiently = 1

Persistent hypotension = 2

#### D. Age (Years)

<30 = 0

30-50 = 1

>50 = 2

Score doubles for ischaemia >6 hours.

Good correlation between MESS score greater than 7 and amputation has been demonstrated

### **Physiological Trauma Score:**

Revised Trauma score:

Respiratory rate

10-29 = 4

>29 = 3

6-9 = 2

1-5 = 1

0 = 0

Systolic BP

>90 = 4

76-89 = 3

50-75 = 2

1-49 = 1

0 = 0

Glasgow coma scale

13-15 = 4

9-12 = 3

6-8 = 2

4-5 = 1

3 = 0

**Anatomical Scoring System (Injury Severity Score (ISS))**

It utilizes the Hospital Trauma Index of the American College of Surgeons, which scores injuries to six organ systems, including the cardiovascular, nervous, respiratory systems, abdomen, extremities, and skin.

The severity of these injuries is graded from zero (no injury) to 5 (critical). ISS is calculated by summing the squares of the three highest values on the Hospital Trauma Index. Maximum injury-severity score is 75.

## 骨折處置之一般性原則

### 名詞定義：

1. 骨折 (Fracture)：當骨骼骨質失去連續完整性時，即稱為骨折。
2. 單純骨折 (Simple fracture)：又稱為封閉性骨折 (Closed fracture)，所謂”單純”指的是表皮完整無損，或僅有和骨折無關的表淺性傷口。
3. 複合骨折 (Compound fracture)：又稱為開放性骨折 (Open fracture)，表示有一和骨折處相通的外在傷口。
4. 脫位 (Dislocation)：關節面 congruency 的完全喪失。
5. 半脫位 (Subluxation)：關節面 congruency 的不全，但關節面的接觸尚未完全喪失。
6. 扭傷 (Sprain)：扭傷意謂負責一關節穩定度的單一韌帶或一群韌帶的不完全撕裂。

### 骨折的原因：

1. 直接撞擊傷害 (Direct violence)：施予一超過骨骼受力極限的壓力所造成的骨折，暴力撞擊是最常見的原因。
2. 間接撞擊傷害 (Indirect violence)：扭轉成彎曲的重力施於骨骼上，而造成骨骼上非直接受力點的骨折。
3. 疲勞性骨折 (Fatigue fracture)：當一力量以過高的頻率重覆施加於一骨骼上時造成的骨折，最常見於 2nd metatarsal (March fracture)。
4. 病理性骨折 (Pathologic fracture)：發生於骨骼本身異常或病態的骨骼上。因骨質的異常減弱了骨骼的強度，所需造成骨折的力量也隨之降低，因此即使極微小的力量亦可能造成骨折。

### 骨折的種類：

1. Hair-line fracture：微小創傷所引起，此創傷足以引起骨折，但無法造成骨碎片的移位。此類骨折又可分為不完全性骨折及完全性骨折。此類骨折在 X 光片中可能不易判讀，但臨床表徵符合時即應懷疑有骨折發生，此時可以下列方式幫助判斷：(1). 在懷疑的部位多照張斜位 X 光片，(2). 不用模糊不清的片子來判讀，(3). 7~10 天後再照張 X 光片，此時骨折處將會變得明顯。
2. Greenstick fracture：發生於兒童，因兒童骨質較軟而富彈性，所以在一側受力時，於對側造成彎曲。通常只造成輕微的骨膜及週圍組織撕裂。

3. Transverse fracture：方向與骨骼的長軸互相垂直，通常由直接衝擊造成。
4. Oblique fracture and Spiral fracture：骨折線和骨長軸所成交角小於 90 度，此兩種骨折導因於間接衝擊，而 Spiral fracture 的特別成因是扭力。
5. Comminuted fracture：骨折碎片超過兩塊以上時，即稱為 comminuted fracture，通常是受到嚴重的暴力撞擊所造成，應注意可能有伴隨的創傷。
6. Double fracture：又稱為 Segmental fracture，為同一骨骼上兩個不同部位產生斷裂的骨折。
7. Impacted fracture：當一骨折斷節被推入另一部份時，即稱為 impacted fracture，常發生於 cancellous bone。
8. Compression or crush fracture：當 cancellous bone 受壓超過忍受極限時，即發生 compression fracture，常見部位為椎體及足跟。
9. Avulsion fracture：導因於一突然的肌肉收縮，使得肌肉撕下其附著部位的部份骨骼。韌帶或關節囊附著處的牽引力亦可能造成 avulsion fracture，進而造成脫位。
10. Depressed fracture：當一局部性重擊使骨皮質凹陷而低於周圍骨骼時，即稱為 depressed fracture，例如 type III tibial plateau fracture。
11. Fracture involving a joint：骨折波及關節時稱之，常造成繼發性骨關節炎 (Secondary osteoarthritis) 及關節僵硬。
12. Fracture close to a joint：當骨折接近一關節時，可能因癒合的骨痂栓住附近的肌肉及肌腱，而引起關節僵硬的問題。
13. Fracture-dislocation：當一關節發生脫位，同時合併有組成關節的一骨骼出現骨折時，即稱為 fracture-dislocation。
14. Complex or complicated fracture：若一骨折伴隨有主要鄰近組織 (例如血管或神經) 的傷害，即稱為 Complex or complicated fracture。

### 骨折位置的描述：

1. 一般將長骨分成三部份：proximal third, middle third, 及 distal third.
2. 骨末端的骨折則依解剖學或相關人名來描述。
3. 移位 (Displacement)：骨折界面彼此之間有移動時，稱為移位，移位方向則依骨折遠段的移動來描述 (向前、向後、向內、向外)，移位的程度則以骨折界面的接觸百分比來粗略估計 (0%、25%、50%、75%、100%)。
4. 彎曲 (Angulation)：描述方法是依所成角度的頂點所指的方向，可以同時描述骨折遠段的偏斜方向加以補充 (例如：femoral shaft middle third fracture with medial angulation / with lateral deviation of the distal fragment)。
5. 旋轉 (Rotation)：表示骨折的一斷節依其長軸旋轉。此類畸形常被忽視，應特別注意其可能性。

### 如何診斷骨折：

## 1. History :

- (1). 當意外發生時，正在從事什麼樣的活動（運動、駕車、工作……）？
  - (2). 此意外事件屬於什麼樣的性質（跌傷、扭傷……）？
  - (3). 所受的力量有多大？如果微小的力量就造成骨折，則要懷疑病理性骨折。如果受到的是嚴重的衝擊，則要考慮是否有多處創傷。
  - (4). 所受力的衝擊點及其方向為何？瞭解受力方向可幫助骨折之整復。
  - (5). 意外事件本身是否隱含其他意義？例如跌倒可能是因為低血壓或腦中風造成，應進一步探究。
  - (6). 疼痛的部位在哪裡？嚴重性如何？
  - (7). 是否造成任何功能上的障礙？
2. 臨床檢查：骨折的診斷，應由病史及臨床的檢查來懷疑是否發生骨折，並且由該部位的X光片來加以確認。

### (1). Inspection :

- i. 外形上的不對稱。
- ii. 皮膚上的局部瘀傷常代表力量衝擊點，循此進一步找尋局部或更遠的部位。可能在瘀傷之下直接造成骨折，也可能在遠處間接造成骨折。
- iii. 局部腫脹或血腫。

(2). Palpation：有骨折必然會引起壓痛，但沒有骨折時也會造成壓痛（軟組織傷害），應由不同方向來觸摸，即可加以鑑別。

### (3). Other signs :

- iv. False movement。
- v. Crepitus。
- vi. 明顯的功能喪失。

### (4). X光評估：

- vii. 在任何懷疑有骨折的病例中，一定要做X光檢查，以提供治療的基礎。並且在診斷存疑時，避免日後的醫療糾紛。
- viii. 開立X光檢查單時應正確點選想看的部位，並描述所懷疑發生骨折的骨骼名稱。（例如：懷疑 tibial plateau fracture 時，應點選 tibia proximal third 或 knee joint，而非僅點選 tibia）。
- ix. 為避免重覆及不必要的X光檢查，開立X光檢查前一定要先徹底詳細的作臨床檢查。

## 3. 確定骨折後，應評估：

- (1). 骨折的本質（外傷性？疲勞性？病理性？）
- (2). 有無移位？方向如何？程度？
- (3). 是否新近發生？有無癒合跡象？
- (4). 有無鄰近傷害或其他骨折？
- (5). 其他狀況的評估：

- (6). 有無 open 的骨折傷口。
- (7). Distal circulation 有無損傷。
- (8). 有無神經受損的跡象。
- (9). 有無臟器的受損。

#### 骨折治療的目標：

1. 儘快獲得正常的骨癒合而無畸形。
2. 功能的恢復。
3. 避免任何早期或晚期併發症的危險。

#### 骨折治療的優先順序：

呼吸道阻塞或傷害、出血及休克、頭部創傷、內臟器官創傷、最後才是骨折的治療。

#### 骨折的初步處理：

以 splint 來防止骨折處的不當移動，並減少疼痛及出血。Open fracture 必須以無菌包紮加以保護。

#### 骨折治療方式的決定：

1. 評估是否需要整復。
2. 若需要整復，應評估如何進行整復（Close reduction? Open reduction?）。
3. 到癒合發生為止，評估應予以何種固定（Traction? Splinting? Casting? Internal fixation? External fixation?）。
4. 若為開放性骨折，評估其程度為何，以決定治療方式。
5. 評估病患是否需要住院。

## Acetabular Fracture 之骨科處置

### 前言:

1. 為一 High energy injury, 50~70%為車禍造成, 1/2 合併有 associated injury.
2. 應儘快 reduction 以減少 risk of osteonecrosis
3. Fracture displacement into sciatic notch 者會傷害到 superior gluteal artery 造成 blood loss. 治療方式為 angiography + embolization
4. 合併 Posterior hip dislocation 者 20%有 sciatic nerve injury, 最常 involve 者為 peroneal division
5. skeletal traction 使用時機: 固定 unstable hip; femoral head 頂到 Fracture edge 時; 或 incarcerated fragment 時.

### 疾病分類:

1. Letournel and Judet classification:
2. 五種 elements Fx types: posterior wall, posterior column, anterior wall, anterior column, transverse
3. 五種 associated Fx types: posterior wall + column, posterior wall + transverse, T-shaped, anterior and posterior hemitransverse, complete both-column

### 身體檢查:

1. ABCs of trauma, Vital sign
2. Morel-Lavalle lesion: Fluctuant and ecchymotic area over the greater trochanter or surrounding area.

### 實驗室診斷檢查:

1. X-ray: AP view, inlet view, outlet view, and Judet view (iliac view, obturator view).
2. Dynamic stress view: 全麻後用 fluoroscopy 來檢查
3. CT scan, 3D CT

### Conservative treatment:

#### Indications:

1. displacement < 2mm, posterior wall 至少 50% intact
2. Patient's age and health (老年人可 non-op Tx, 以後 OA 再換 THR 即可)
3. Non-weight bearing for 3 months.

### Surgical treatment:

#### Indications:

1. displacement > 2mm, posterior wall defect size > 50%
2. displaced both-column Fx without secondary congruence

Method: ORIF with screws and reconstruction plate

Surgical approach: Kocher-Langenbeck approach, ilioinguinal approaches, extended iliofemoral approach

### **Surgical complications:**

1. Intraarticular screw impingement
2. 有 Morel-Lavalle lesion 者 Liquefied hematoma and tissue necrosis 中有 46% culture 為(+), 為一 risk factor of infection with surgery
3. Posttraumatic arthritis: 最常見, 五年追蹤發生率: 15~45%, 治療: THR
4. Heterotopic ossification:
  - (1). Risk factors: extensile approach (剝離 abductor muscle), associated injury to chest or abdomen, T-type fracture pattern, Closed head injury, Male, Trochanteric osteotomy
  - (2). 發生率高達 80%, 只有少部份病人會喪失 > 20% 的 ROM. 治療: surgical resection
  - (3). 預防: indomethacin (25mg/day) or irradiation (700Gy on post-op day 1)
5. Deep vein thrombosis:
  - (1). High incidence, PE 發生率可高達 10%, 致命 PE 發生率可高達 2%
  - (2). Evaluation: duplex ultrasound, MR venography
  - (3). 發現 thrombus 者, 建議手術前先放置 IVC filter
  - (4). 建議應做預防, 方式不拘

### **術後追蹤:**

1. Non-weight bearing for 6 to 8 weeks, continue partial weight bearing for an additional 4 weeks. (Depends on the quality of bone, adequacy of reduction, and stability of fixation)
2. During non-weight bearing period, active and active assisted ROM is encouraged.
3. When full weight bearing, aggressive therapy for gait training and muscle strengthening is required.

### **病患及家屬常見問題釋疑:**

1. 會不會有生命危險?  
答: 髌骨骨折大多不會有生命危險, 但若合併骨盆骨折者, 可能會造成大量出血而產生休克。
2. 要不要開刀?  
答: 未移位性髌骨骨折可不必開刀, 以牽引治療四至八週即可。但移位性骨折則需開刀復位及內固定。
3. 需不需要馬上開刀?

答：若合併髖關節脫臼者應儘快予以徒手復位，無法徒手復位者應儘快開刀手術復位。若無合併髖關節脫臼者，可先臥床及牽引治療，不必馬上開刀。

4. 會不會有什麼後遺症？

答：可能發生的後遺症包括：感染、坐骨神經損傷、栓塞性靜脈炎、異位性骨化、創傷後骨關節炎、股骨頭缺血性壞死等等。

## **Femoral Intertrochanteric Fracture 之骨科處置**

### **前言:**

1. ITF 者年紀較大, poorer health, four or more comorbid conditions (與 FNF 相比)
2. FNF 很少造成 OA, ITF 則常與 OA 有關.

### **疾病分類: (Boyd Classification)**

1. Boyd type I: nondisplaced fracture
  2. Boyd type II: displaced fracture.
  3. Boyd type III: loss of posteromedial buttress or reverse oblique
  4. Boyd type IV: subtrochanteric extension
- ◎ Stability 是分類時最重要的因素, 由 intact or reconstructible posteromedial cortical buttress 提供.
  - ◎ Unstable 的狀態包括: loss of posteromedial buttress, subtrochanteric extension, or reverse oblique.

### **治療:**

#### **Body type I & II:**

1. Sliding hip screw: The implant of choice, 最常用是 135 度 (130~150 度都有)

#### **Boyd type III & IV:**

1. 95 degrees angle plate
2. DCS (dynamic compression screw)
3. IM device: Indications: comminuted Fx with subtrochanteric extension, reverse oblique, and high subtrochanteric
4. Prosthetic replacement:
  - (1). Indications: Comminuted unstable Fx, ORIF failure
  - (2). Method: Calcar replacing prosthesis

## Femoral Neck Fracture 之骨科處置

### 前言:

#### 好發兩個年齡層:

1. < 50 歲 (high-energy trauma: orthopedic emergency)
2. Elderly (low-energy trauma)

#### 疾病分類: (Garden classification)

1. Type I and II: impacted or nondisplaced.  
Type I: incomplete or impacted in to valgus and retroversion.  
Type II: complete but undisplaced, no shift in alignment.
2. Type III and IV: displaced.  
Type III: marked angulation, but minimal or no proximal translation of the shaft.  
Type IV: complete displaced. The head is free to realign itself within the acetabulum.
3. Basicervical Fracture

#### 身體檢查:

1. The degree of shortening and rotation of the lower extremity
2. Localized tenderness and swelling
3. Complete motor, sensory, and vascular exam
4. Identify any additional sites of musculoskeletal trauma.

#### 實驗室診斷檢查:

1. AP view of pelvis with the patient's legs internally rotated.
2. Cross-table lateral view of hip.
3. CT scan, Bone scan, and MRI for occult fracture.

#### 治療:

1. Nondisplaced Fracture: 3 或 4 根 parallel lag screws fixation
2. Displaced Fracture:
  - (1). ORIF with 3 或 4 根 parallel lag screws fixation:
    - i. 需 anatomic reduction and stable internal fixation, 愈快愈好.  
(urgent reduction with capsulotomy 可幫助 femoral head blood flow)
    - ii. 可試著做 gentle close reduction, 如果不行, 就 open reduction (via anterolateral or anterior approach)
    - iii. 可接受的 reduction: valgus < 15 度, anterior/posterior angulation < 10 度
  - (2). Primary prosthetic replacement:
    - iv. 適用於 older, less active patient.
    - v. Cemented 比 noncemented 好

- vi. Bipolar hemiarthroplasty 可減少 incidence of acetabular erosion. 但大於 80 歲者, result 沒差別, 用 unipolar hemiarthroplasty 就可以了.

(3). Primary cemented THR:

- vii. Indications: Preexisting acetabular disease (RA, OA, Paget's disease)

3. Basicervical Fracture:

位置在 Base of neck, 是 extracapsular Fx, 治療與 ITF 相同, 但要做一些 modified: 此處 cancellous bone 較少, screw insertion 時容易 head spin, 建議使用 antirotation screw or guide wire.

**Surgical complications:**

1. Nondisplaced fracture: nonunion and ON 不常見 (nonunion < 5%, ON < 10%)
2. Displaced Fracture: nonunion: 10~30%, ON: 15~33%

**術後追蹤:**

**Weight bearing :**

1. For elderly patients : weight bear as tolerated and abductor strengthening start in the 4<sup>th</sup> week.
2. For young patient : weight bearing restriction for 6 to 8 weeks.

## Hip Dislocation 之骨科處置

### 前言:

1. 最常見的 associated injury 包括 fracture of ipsilateral femoral head, neck, and shaft, pelvis and acetabulum.
2. 影響 outcome 的因素: time to reduction, presence of associated fracture, post-injury management

### 疾病分類:

1. Anterior dislocation: 佔 10~18%. Associated femoral head Fx 機率: 22~77%
2. Posterior dislocation: 佔 90%, 如果無合併 fracture, 則復位後穩定
3. Posterior dislocation 合併 femoral head Fx (Pipkin classification):
  - (1). Type I: Fracture caudad to fovea a closed reduction
  - (2). Type II: Fracture cephalad to fovea a closed reduction
  - (3). Type III: associated with femoral neck fracture
  - (4). Type IV: associated with acetabular Fracture

### 身體檢查:

1. Abdomen, head, or chest trauma?
2. Extremity deformation ( Flexed, adducted, and internally rotated leg in posterior dislocation; abducted and externally rotated leg in anterior dislocation )
3. Femoral head, neck or shaft fracture? Acetabular fracture? Pelvis fracture? Knee injury? Ankle and foot injury? Spine injury?
4. Sciatic nerve function
5. Femoral vessels ( in anterior dislocation )

### 實驗室診斷檢查:

1. Reduction 前 : Pelvis AP view
2. Reduction 後 : All five standard views of pelvis ( AP, both Judet, inlet and outlet views ) , CT scan with 2-mm cuts through the hip.

### 治療:

#### 1. Anterior dislocation:

- (1). Conservative treatment: close reduction (traction, then extension and internal rotation)

(2). Surgical treatment:

- i. Indication: displaced fragment with nonconcentric reduction
- ii. Method: open reduction + excision or ORIF

(3). Complications:

- iii. Osteonecrosis 發生率: 10%. (Risk factors: delayed reduction, repeat attempts)
- iv. Posttraumatic OA risk factor: transchondral Fx, indentation Fx with depth > 4mm, osteonecrosis

2. Posterior dislocation:

(1). Conservative treatment:

- v. 如果無合併 fracture, 則 close reduction 後即穩定.
- vi. Posterior wall fragment < 20~25%: 不影響 hip stability

(2). Surgical treatment:

- vii. Indication: posterior wall fragment > 40~50%
- viii. 中間大小: 由 posterior capsule 決定 stability (Stress test under fluoroscopy)
- ix. reduction 失敗或 nonconcentric.

(3). Method: ORIF with screws and reconstruction plate

3. Posterior dislocation 合併 femoral head Fx: Surgical treatment

(1). Type I: Open reduction; Fragment: excision or fixation

(2). Type II: Open reduction from anterior approach and internal fixation

(3). Type III:

- x. 年紀<50 歲或 active patient 者: ORIF
- xi. Elderly or low demanding patient: prosthetic replacement

(4). Type IV: ORIF for femoral head & acetabulum

**Surgical complications:**

1. Osteonecrosis :

(1). Incidence : 2~40% (5 年內都可能發生), 6 小時內 reduction 可使 ON 機率降至 2~10%

(2). Posterior dislocation 合併 femoral head Fx 者 :

Type I,II 和 dislocation 相同 , Type IV 和 acetabular fracture 相同 , Type III: 50% ON, poor result

2. Arthritis : most common complication. Incidence: 20% to 30%

3. Heterotopic ossification

4. Sciatic nerve dysfunction

**術後追蹤:**

## 1. Weight bearing ?

### (1). 6 小時內 Reduction 者 :

- i. rest for several days to 2 weeks, then followed by mobilization to avoid adhesion and OA.
- ii. Avoid extreme motion for 6 to 8 weeks to allow for capsular healing.
- iii. Toe touch weight bearing within one week, gradually increase to full weight bearing by 6 weeks.

(2). 6 小時後才 Reduction 者或需要 open reduction 者 : Delay full weight bearing for 8 to 12 weeks.

(3). Dislocation with associated fractures : Active hip motion begin at 6 weeks. Toe touch ambulation for 10 to 12 weeks.

## 2. Rehabilitation :

(1). Restoration of motion and strengthening the hip musculature.

(2). Concentrate on the abductor muscles.

(3). Proprioceptive training and coordination exercise after muscle strength is restored.

### **病患及家屬常見問題釋疑:**

#### 1. 需不需要開刀?

答:單純的髖關節脫臼應儘快予以復位,若無法徒手復位則應開刀手術復位。合併骨折的髖關節脫臼則視骨折部位及骨碎片大小來決定,必要時需手術復位及內固定。

#### 2. 會不會有什麼後遺症?

答:可能的後遺症包括:坐骨神經損傷、股骨頭缺血性壞死、重覆性脫臼、異位性骨化、以及創傷後骨關節炎等等。

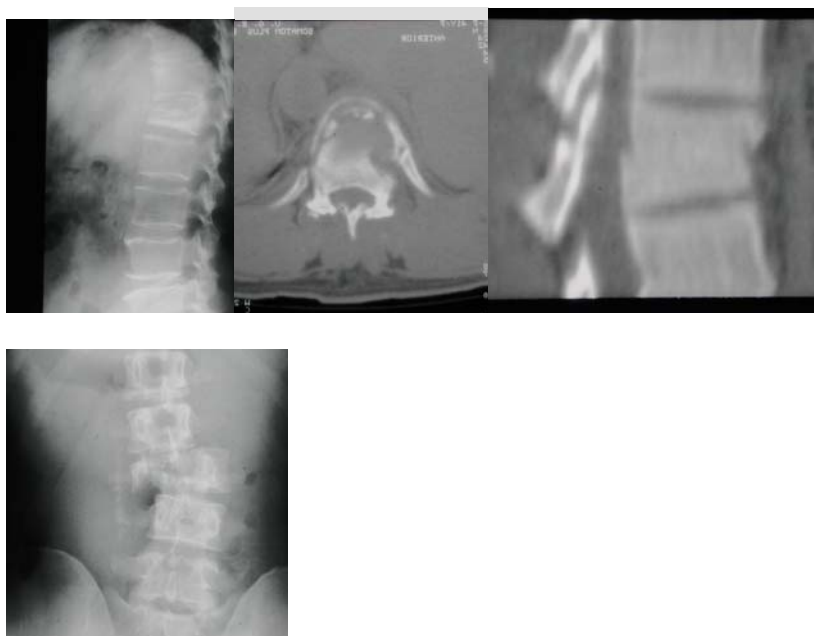
## 胸腰椎骨折之骨科處置

### 前言:

1. Definition: Traumatic injury to the spine results in anatomic structure change with or without neurological deficit.
2. Incidence: 50000 new cases / year in North America, 10-38% patients with neurological injury
3. Peak incidence: 15- 24 years old and over 55 years old
4. Etiology: motor vehicle accident, or fall from a height, or even a direct trauma

### 疾病分類:

- 1.Compression fracture, 2.Burst fracture, 3.Chance fracture, 4.Fracture- dislocation



身體檢查: (modified Frankel Classification/ ASIA Impairment Scale of Neurological Deficit Following Spinal Cord Injury)

<b>Grade</b>	<b>Characteristics</b>
A	Absent motor and sensory function below level of injury
B	Absent motor function below level of injury, sensation intact
C	Very weak (grade 1/5 to 2/5) motor function below level of injury, sensation intact
D	Weak (grade 3/5 to 4/5) motor function below level of injury, sensation intact
E	Normal motor and sensory function

- ◎ Anal tone
- ◎ Urinary bladder function
- ◎ Other organ injury

**放射線診斷檢查:**

1. X-ray: anteroposterior and lateral view, degree of vertebral height loss
2. Computerized tomography (CT): degree of spinal canal compromise
3. Magnetic Resonance Image (MRI): degree of spinal cord compression, and injury level

**治療: (Medications)**

1. Presenting spinal cord injury within 8 hours after injury:
2. Methylprednisolone: Bolus 30mg/kg, maintenance does: 5.4mg/kg/hour, continues for 24 hours if starts within 3 hours of injury, otherwise, continues for 48 hours

**Surgical management:**

**1. Compression fracture:**

- (1). Posterior instrumentation if body height loss > 50%

**2. Burst fracture:**

- (1). Posterior instrumentation if body height loss > 50% , or canal compromise > 40%
- (2). Plus anterior corpectomy and reconstruction if neurological deficit persists after posterior instrumentation or impending further collapse of body height

**3. Chance fracture (flexion-distraction injury):**

- (1). Bony type: bracing or casting for 4-6 months, posterior instrumentation in case of poor compliance for conservative treatment
- (2). Ligamentous or mixed type: posterior instrumentation

**4. Fracture-dislocation:**

- (1). Posterior reduction as soon as possible, posterior instrumentation, plus anterior decompression if canal compromise persists with neurological deficit

**術後追蹤:**

1. Post-operative bracing for 4-6 months
  - (1). Taylor brace, Boston brace, or TLSO
2. Follow x-film every 6 weeks till 6 months, then every 3 months till one year
3. CT for evaluating union status
4. Continue rehabilitation program in case of incomplete neurological deficit

## 5. Continue training of self-care ability for complete neurological deficit

### **病患及家屬常見問題釋疑:**

1. 受傷後，發生神經功能的損害，有機會變好嗎？

答: 神經細胞的損害程度，在受傷的那一剎那就決定了。手術治療的作用，在於停止傷害的繼續進行，同時恢復脊柱原有的結構及其穩定性。若傷害因此停止，神經自己的再生功能才有進步的機會。目前也有很多研究，探討加速神經再生的方法。其中也包括幹細胞的應用。有朝一日，也許可以讓神經受傷而癱瘓的患者重新站起來、走路。

2. 如果下肢癱瘓無力，無法自行上廁所，大小便怎麼處理？

答: 嚴重的神經損傷，可能同時造成大小便控制的障礙。女性患者可訓練自己定時導尿，男性患者則可考慮直接從膀胱上造導尿管。至於大便的處理，大腸造瘻是較方便由患者自行處理的方式。若肛門括約肌的功能漸漸恢復，則定時灌腸排便。

3. 持續的復健治療會繼續有進步嗎？

答: 復健治療可以維持關節的活動度，避免僵硬。即使無法進步到自行走路，至少可以讓照顧的人員比較方便照護。同時對於肌力的保持，甚至增進，很有助益。特別是功能未完全喪失者，更加需要積極復健治療。

## 小兒骨科疾患與Psychomotor skill development:

1. Social smile: 2 months
2. Head control: 3m.
3. Sitting: 7m.
4. Crawling: 8m.
5. Standing: 10m.
6. Independent walk: 12m.

Abnormal if:

1. Not rolling by 6m
2. Not sitting by 8m
3. No words by 14m
4. Not walking by 18m

1. Femoral epiphyses ossific centre: appears 4m~11m.
2. Tarsal navicular: 3y to 4y.
3. Elbow: CRMTOL – Capitellum, Radial Head, Medial epicondyle, Trochlea, Olecranon, Lateral Epicondyle. Appears at ages 1\_3\_5\_7\_9\_11.
4. Normal Baumann's Angle at the distal humeral articular surface:  $20^{\circ} \pm 4^{\circ}$
5. C-spine: children C2/C3 pseudo subluxation  $\leq 3$  mm.
6. Odontoid fuses with the body: 3 to 6 y.
7. Atlas-dens interval:  $\leq 5$ mm.
8. Centre of ossification for the vertebral body of Atlas: appears during the first year after birth.

1. 上肢主要生長在遠離 elbow 處(humerus 近端和 forearm 遠端)，下肢生長在主要在 knee 附近。UE: 82-28, LE: 37-64. Overall length: UE: 4114, LE: 3863

1. Anderson and Green Growth Chart: curved line graph.
2. Moseley's Growth Chart: straight-line graph, predicting LLD.  $\geq 3$  readings at 6 m interval.
3. Rough estimation: knee: 15 mm/y, 9 mm at distal femur, 6 mm at proximal tibia.

1. Rotation profile:

- 甲、Foot Progression Angle:  $-5\sim+16$  deg.
- 乙、Femoral anteversion:  $40^\circ$  at birth,  $15^\circ$  in adults.
  - i. Murphy's: CT
  - ii. Staheli's clinical evaluation with patient prone.  $\uparrow$ Anteversion: if IR  $> 70^\circ$  & ER  $< 20^\circ$ .
- 丙、Tibial version:
  - i. Thigh Foot Angle 一歲以上應  $> 0^\circ$ .
  - ii. Trans-malleolar axis: Birth:  $-15^\circ$ , 1y:  $+5^\circ$ , Mid childhood:  $10^\circ$ , Adulthood is:  $20^\circ - 24^\circ$ .
- 丁、Metatarsus adduction: heel bisector line: normally intersect between 2<sup>nd</sup> & 3<sup>rd</sup> toes.

2. **Genu varum** after 2y 須檢查.

- 甲、Physiological genu varum 1~1.5y, change to excessive valgus by 4, normal valgus by 6.
- 乙、Metaphyseal diaphyseal angle:  $\leq 11^\circ$  at 2y.

1. Pelvis AP view:

- 甲、acetabular index:
  - i. 1y:  $< 30^\circ$ , 2y:  $< 25^\circ$ , 3y:  $< 20^\circ$ .
  - ii. Femoral head OC appears by 4m, up to 11 months is normal.
- 乙、Lines:
  - i. Hilgenreiner's Line: through the triradiate cartilage.
  - ii. Femoral head OC: normally lies medial to Perkin's line.
  - iii. Shenton's line in a normal hip is not broken.
  - iv. Center edge angle of Wiberg, normal  $20^\circ$ .

2. Foot x-rays:

- 甲、AP talocalcaneal angle: Kite angle,  $20^\circ\sim 40^\circ$ .
- 乙、Dorsiflexed-lateral view: Turco View, talocalcaneal angle on the lateral film  $> 35^\circ$ .

1. Definitions & Terminology

- 甲、Kinematics: study of motion
- 乙、Kinetics: forces that produce motion
- 丙、Cadence: number of steps per unit of time
- 丁、Stride: one cycle includes right and left steps
- 戊、Perry's 3 ankle rockers

- i. First rocker: first stage of ankle motion in stance phase
- ii. Second rocker: ankle motion when the foot is flat on the ground
- iii. Third rocker: starts at the heel rise, ends at toe off the ground

己、Components of Gait:

- i. 60% is stance phase
  - 1. Initial contact
  - 2. Loading response
  - 3. Midstance
  - 4. Terminal Stance
  - 5. Pre Swing
- ii. 40% is swing phase
  - 1. Initial Swing
  - 2. Mid Swing
  - 3. Terminal Swing

庚、Five priorities of normal gait

- i. Stability in stance phase
- ii. Foot clearance in swing phase
- iii. Pre positioning of the foot for initial contact of next step
- iv. Adequate step length
- v. Energy conservation.

1. Incidence: 1~6 /1000 live births.
2. Risk factors: First born female. Family history, Breech presentation, associated torticollis, scoliosis or musculo-skeletal abnormalities.
3. Theories:
  - 甲、Mechanical theory
  - 乙、Maternal hormone induced theory
  - 丙、Primary dysplasia theory
  - 丁、Genetic
4. Diagnosis:
  - 甲、Ortolani test for dislocated hips (reducible)
  - 乙、Barlow's test: provocative test (dislocatable)
  - 丙、Galeazzi's sign: shortening of the involved thigh
5. Treatment:
  - 甲、New born: Pavlik harness for 4-6 weeks, if not stabilized in harness, CR & spica.
  - 乙、CR: safe zone of Ramsey: to avoid AVN. Minimum of 20°, 45° is

preferable.

丙、Irreducible hip: arthrography and open reduction if necessary

丁、Arthrography:

- i. Acetabulum dysplasia?
- ii. Hip subluxation or dislocation?
- iii. Reducible?
- iv. ST interposition?
- v. Pooling of dye medially?
- vi. Inverted limbus? Thorn sign is seen in normal hips.

戊、Open reduction

- i. Anterior approach: Smith Peterson approach. modified by Somerville (bikini incision instead of ilioinguinal incision).
- ii. Antero-medial approach: Weinstein and Ponseti.
- iii. Medial approaches: Ludloff's or Ferguson approach. Basic difference is going either anterior or posterior to the adductor brevis.

6. Kalamchi classification of AVN

甲、Type I: Ossific center not appeared by the age of 1 year

乙、Type II: Damage to the lateral part of the physis resulting in valgus neck

丙、Type III: Damage to the growth plate more centrally resulting in cessation of growth of the femoral neck with relative overgrowth of GT

丁、Type IV: Total involvement

7. Salter's Innominate Osteotomy: Prerequisites

甲、Femoral head level with acetabulum

乙、No fixed flexion or adduction contracture

丙、Head reduced completely & concentrically

丁、Hip joint must be congruous

戊、Good hip range of motion.

8. Pelvic osteotomies:

甲、**Salter's** innominate hinges at the **pubic symphysis**

乙、**Pemberton's** osteotomy hinges at the **triradiate cartilage**

丙、**Steel's triple** osteotomy, which osteotomises ileum, pubis as well as ischium and rotates acetabulum

丁、**Dial, or Ganz technique in adolescent hips:** Periacetabular procedures for rotation of the acetabulum

戊、**Staheli's Shelf, Chiari's displacement osteotomy:** salvage procedures

1. Incidence 1 in 1200, Age 3 to 12, male to female 4:1, 15% bilateral

2. Waldenstrom radiographic staging:
  - A 、 Stage of necrosis: 6m
  - B 、 Stage of resorption or fragmentation: 6m
  - C 、 Stage of re-ossification: 1.5y
  - D 、 Stage of remodeling: 3y
3. Catterall classification (4 groups)
  - A 、 Central anterior head involved
  - B 、 25%~50% of head involved, medial & lateral columns intact
  - C 、 50%~75% of FH involved but intact medial column
  - D 、 Whole head involved
4. Salter's classification (2 groups, based on Crescent sign due to subchondral Fx)
  - A 、 < 50% FH involved, intact lateral pillar
  - B 、 > 50% FH involved
5. Herring lateral pillar classification (3 groups)
  - A 、 Lateral pillar intact
  - B 、 Lateral pillar collapsed < 50% of the normal side
  - C 、 Lateral pillar collapsed > 50% of normal height.
6. "Head at risk" signs of Catterall:
  - A 、 Calcification lateral to epiphysis
  - B 、 Lateral subluxation
  - C 、 Lucency proximal and distal to lateral physes (Gage's Sign)
  - D 、 Metaphyseal cysts Horizontal physis
7. Stulberg Rating System at maturity: (use Mose's concentric circles)
 

Class 1: Normal femoral head

Class 2: Spherical femoral head with short femoral neck and coxa magna

Class 3: Non-spherical or ovoid femoral head, which is not flat

Class 4: Flat femoral head as well as flat acetabulum

Class 5: Flat femoral head but normal acetabulum.
8. Treatment options:
  - A 、 Do nothing or supervised neglect
  - B 、 Ambulation abduction brace or cast
  - C 、 Femoral varus or valgus osteotomies
  - D 、 Innominate osteotomies
  - E 、 Epiphysiodesis
9. Important clinical prognosticator: ROM, especially abduction.
10. Guidelines by Herring are:
  - A 、 < 6y, treat the symptoms
  - B 、 6y~8y, Group B does better with containment methods and Group C in this

age group effect of any treatment is inconclusive

C、 $\geq 9$ y, Group A: symptomatic treatment; group B & C: bracing is difficult, operative treatment has got a stronger argument

11. Salvage procedures:

A、Shelf Arthroplasty

B、Chiari osteotomy for head coverage

C、Valgus osteotomy has been performed in selected cases to increase abduction

D、Advancement of greater trochanter

1. Incidence: 2 (1~7) per 100,000 population, more common in black males.

2. Etiological factors:

甲、Anatomical & structural features: Retroversion of the femoral head more prevalent (10 degrees more than normal)

乙、Maturation factors: in girls before menarche - increase in thickness of the physis reduces its resistance to shear

丙、Structural abnormalities of the physis itself

丁、Endocrine:

i. Bilateral SCFE: 70% in pt with endocrinopathy

ii. Bilateral SCFE: 25% in pt without endocrinopathy

戊、Triggering traumatic event

3. Clinical classification:

甲、Pre-slip

乙、Acute slip

丙、Chronic slip

丁、Acute on chronic slip

4. Dunn's clinical classification

甲、Acute traumatic slip

乙、Chronic slip.

i. Acute on chronic

ii. Early

iii. Late

5. Severity of slip:

甲、Grade I or mild slip:  $\leq 1/3$  of the metaphyses uncovered

乙、Grade II or Moderate slip:  $\leq 2/3$  of the metaphyses uncovered

丙、Grade III or Severe slip:  $> 2/3$  of the metaphyses uncovered

6. Southwick's classification based on Southwick Angle Difference.

- 甲、Mild slip:  $< 30^{\circ}$
  - 乙、Moderate slip: 30-60
  - 丙、Severe slip:  $> 60^{\circ}$
7. Loder's stable/unstable classification (JBJS 1993)
- 甲、Unstable: unable to tolerate any kind of weight bearing: 14/30 (47%) AVN.
  - 乙、Stable: 0/25 (0%) AVN.
8. X-Ray:
- 甲、Decreased height of the epiphyses
  - 乙、Metaphyseal blanch sign
  - 丙、Trethowen's sign: Klein's line
  - 丁、Dx of chondrolysis: 較另一側  $\downarrow$  joint space  $\geq 2$  mm.
9. Treatment options:
- 甲、Mild & moderate slips: pinning in situ.
    - i. Principles of treatment:
      - 1. Prevent further slip
      - 2. Promote closure of physes
  - 乙、Severe slip: gentle manipulation before surgical intervention is controversial.  
Ponseti and Weinstein have suggested 5-pound traction before pinning.
  - 丙、Surgical options:
    - i. PIS - can be technically demanding if significant displacement
    - ii. Gentle reduction & PIS in severe slips - controversial
    - iii. Bone graft epiphyseodesis
    - iv. Osteotomies in severe slip
      - 1. Subcapital osteotomy described by Dunn
      - 2. Extra capsular, basal neck osteotomy
      - 3. Southwick - inter-trochanteric osteotomy
      - 4. Sugioka rotational osteotomy of the femoral neck
10. Main Complications in SCFE:
- 甲、Chondrolysis
  - 乙、AVN

## 膝部皺襞(plica)之骨科處置

### 前言:

1. Etiology: unresolved remnants of synovial partitions.
2. Majority are thin, pliable synovial folds that are asymptomatic.
3. Pathologic changes are usually secondary to trauma, strenuous exercise, or any inflammatory process of knee joint.
4. Fibrotic band can impinge on medial femoral condyle or cause pain due to tethering effect on its synovial insertion, rich in nerve endings.
5. A pathological suprapatellar plica is usually a large structure showing evidence of impingement, with synovial overlying distal femur as knee flexed.
6. Incidence: 19%~60% of normal knee

### 疾病分類:

1. Suprapatella plica, infrapatella plica: 90% of knees examined arthroscopically
2. Medial patellar plica: 75%, most common cause symptoms.
  - (1). Cause symptoms only if it thickened and inelastic from trauma or chronic inflammation.
3. Lateral patellar plica: 1%
4. Bucket-handle plica: separation from medial wall of joint and may account for mechanical symptoms.
5. Shelf: complete fold with a sharp free margin.
6. Band, fenestrated band or several small folds.

### 身體檢查:

1. Localized tenderness above joint line on anteromedial aspect of knee with palpable or an audible snap between 45 to 60 degrees of knee flexion.
2. Popping of plica over medial femoral condyle with active flexion and extension of joint, more common at 30 to 40 degrees.
3. Symptoms/signs:
  - (1). Typical in young athlete
  - (2). Intermittent dull and aching pain at superior aspect of knee over femoral condyle
  - (3). Activity related pain and tenderness at anteromedial knee, localized swelling
  - (4). Chronic anterior knee joint pain, clicking in flexion and extension of joint
  - (5). Most common cause of symptomatic medial plica are direct trauma and repetitive overuse, such as running, biking, stair stepping or kneeling

**實驗室診斷檢查:**

1. MRI, CT
2. Arthroscopy: localized chondromalacia on medial femoral condyle and patella as well as inelastic; fibrotic plica; rounded; thickened and whitish

**治療:(Conservative treatment)**

1. modification of activities
  - (1). reduce repetition flexion and extension
  - (2). avoid keeping knee flexed for prolonged periods of time.
2. quadriceps exercise consisting of isometric and straight-legged exercise.
3. anti-inflammatory drugs

**Surgical treatment:**

1. Symptoms are chronic and conservative treatment failed. (Arthroscopic resection)
2. Surgical complications: postoperative hemarthrosis.

**病患及家屬常見問題釋疑:**

1. 會不會復發？

答：手術完全切除後應不會復發。

2. 常見的併發症？

答：膝關節內積血，但目前手術當中均使用燒灼器，因此發生率很低。

## 膝關節前十字韌帶損傷之處置

### Definition:

The Anterior Cruciate Ligament (**ACL**) is a ligament that connects the tibia to the femur. It serves to prevent the tibia (leg) from moving forward relative to the femur (thigh). The ACL is in the center of the knee - it crosses the PCL - hence the name - "cruciate".

### Etiology:

This ligament is frequently injured in contact sports (such as football) and pivoting sports (such as soccer and skiing) - although there are many scenarios for injury to this ligament. Usually the patient complains of a sudden injury to the knee and the inability to walk right after the accident. Often, there is a significant amount of swelling that occurs relatively soon after the injury. In contact sports, such as football, the injury typically occurs when another player impacts the side of the knee.

Non-contact ACL injuries are more common in women - such as a female soccer player who suddenly changes direction and feels a pop in her knee.

### Symptoms:

Initially, the symptoms are pain, and fairly immediate swelling. Often patients will complain of hearing a loud "pop", which is the sound of the actual ligament tearing. After the pain and swelling resolve, patients complain of episodes of instability, or giving-way. The knee feels loose. Some people liken this to walking on rollerskates. For some people, this looseness is predictable; other people live in fear of their knee giving out because they are unable to predict the motions that cause the instability.

### Diagnosis:

The diagnosis of an ACL tear should be made by a history of a characteristic injury and physical exam. MRI can help confirm the diagnosis because it is quite accurate for ACL tears. However, MRI is usually not necessary for making the diagnosis. It depends on the severity of the injury and whether there are any other associated injuries, such as a medial collateral ligament tear or a meniscal tear. Often the swelling resolves after a couple of weeks. Some patients will be able to function without any problems after they get over the initial injury, especially if they had only a partial tear. The majority, however, will notice "**instability**" - the feeling that their lower leg is shifting forward on their thighbone. For some, this will be a minor nuisance; for others, it will be a significant disability.

### **Physical Exam:**

The physical exam of the knee with a recently torn ACL will demonstrate several characteristic findings. There will be a large amount of swelling in the knee joint. This swelling is actually blood from the blood vessels that tear in the ACL. The knee will likely not have a full range of motion. The most important and accurate test for an ACL tear is called the Lachman Test. To perform this test, the physician places one hand around the upper part of the lower leg and one hand around the thigh and positions the knee at approximately twenty degrees of knee flexion. The leg is then gently translated upward (anterior) with respect to the thigh. If there is significantly more translation than in the other knee, this is consistent with an ACL tear. An adept sports medicine physician should be able to make the diagnosis of an ACL tear with a physical exam.

### **Positive physical signs:**

1. Lachman test
2. Anterior drawer test
3. Pivot shift test

### **Physical measurements need to be documented:**

1. Pre-operative ROM
2. Status of muscle ( esp. quadriceps m. ) wasting
3. Presence of effusion or swelling of knee joint
4. Other associated instability
5. McMurray test
6. Joint line tenderness
7. KT 2000 arthrometry

### **實驗室診斷檢查:**

1. Plain X-films
2. Stress films for torn ACL
3. MRI maybe helpful, but not mandatory.

### **治療:**

#### **1. The first step is to get your pain under control**

This should be done regardless of whether you plan to have surgery or not. Because of the swelling (caused by blood in the knee), the knee will be difficult to extend (make straight) for several days. Cryotherapy is an important aid in relieving pain and decreasing the swelling. You can use an icebag if you wish, but that can be

inconvenient and messy.

## 2. Second, get your motion back

It is imperative to get the motion in your knee back as quickly as possible (after resting for a few days) to prevent a permanent loss of motion ("contracture"). This is achieved with various exercises. If you have access to a gym or physical therapy, great. In addition, your doctor will often recommend a brace to help you regain motion while protecting the knee from further injury.

**Important note:** Even if you plan to have the ACL reconstructed, most orthopedic surgeons will not reconstruct your knee until you have regained your motion! The reason is simple - if you start off with a stiff knee **before** surgery, you will end up with a stiff knee **after** surgery. Once you regain your motion, the decision needs to be made whether you will need surgery.

## 3. How do you and your doctor decide if you need surgery

This is a very complicated question and generally can only be answered by discussion with your orthopedic surgeon. There are a few guidelines, however. Typically, the decision to reconstruct the ACL is based on the following:

- (1). Patient's age and activity level.
- (2). Associated injuries, such as a meniscal tear, medial collateral ligament injury, or significant cartilage injury.
- (3). Response to rehabilitation.
- (4). Amount of instability and magnitude of the patient's symptoms.

Generally speaking, a young high school football player who injures his ACL and wants to continue to compete at the same level or higher (eg. college play) will require a reconstruction. Another player may decide that he doesn't want to play football ever again and is happy surfing the internet and swimming - this person may not require an ACL reconstruction. A 32 year old skier who has injured her ACL and medial meniscus, and wants to continue to ski recreationally, should probably have her ligament reconstructed. As you can see, the permutations are endless - the decision needs to be made on a patient-by-patient basis with a surgeon who knows you and your lifestyle demands. Most sports medicine orthopedic surgeons do not place an "upper age limit" on whether to reconstruct the ACL.

### **If surgery is not necessary (Non-operative exercise therapy)**

strengthening exercises, particularly of the hamstrings are prescribed

1. Maintaining range of motion
2. Regaining stability by improving your muscle strength. By strengthening the muscles you can compensate for the absence of the ligament.
3. Knee bracing to help you regain stability of your knee, especially for sports.

### **ACL reconstruction surgery:**

Because the ACL has little to no capacity to heal itself, the ligament can only be reconstructed (replaced) - it cannot be repaired (sewn back together).

There are many methods of reconstructing the ligament - be sure to talk these over with your surgeon. Typically, a tendon from somewhere else in your knee or from a tissue bank (allograft) will be used to substitute for your old ACL. There are several choices for grafts including the patellar tendon, hamstring tendons, quadriceps tendon, achilles tendon, anterior tibialis tendon, and others. This tendon is fixed with a variety of methods including screws (either metal or plastic), buttons, pins, etc. The exact type of reconstruction will depend on your surgeon's preference based on his/her experience and success rates. Most surgeons nowadays will perform this reconstruction arthroscopically.

***After surgery***, there are several steps to your healing:

1. First, you need to get your pain under control and decrease the swelling. Virtually every surgeon will recommend ice therapy of some kind. Some will prescribe a cryotherapy device. You may not have been prescribed a cryotherapy device because your insurance may not cover it - paying the hospital for the device can be VERY expensive.
2. Second, you need to rehabilitate your knee. First you need to regain your motion, then your strength. This is usually done with the assistance of a physical therapist. However, in our experience, those people who perform exercises on their own, in addition to the 1-3 times a week prescribed physical therapy, will have superior results from their reconstruction. In our own patients, it is easy to see who is doing their exercises at home and who is not. Those people who do home exercises clearly recover their range of motion and strength quicker, regain normal gait faster, and get back to non-pivoting sports (eg. biking, running, swimming) sooner.
3. Third, you need to discuss bracing with your doctor. This is usually broken down into two phases in the postoperative period - the ***immediate postop phase***, and the ***rehabilitation phase***. The immediate postop phase begins on the day of surgery and lasts for several weeks thereafter (the exact duration varies from surgeon to surgeon). Most doctors will give you a "range-of-motion" or "postoperative brace", immediately following surgery to protect your newly reconstructed graft.

The second period is the rehabilitation phase. After your ligament has healed, your motion has been regained, and much of your strength improved, your surgeon may recommend a functional or "sports" brace. The decision will be based on your stability after reconstruction, the types of sports you want to return to, and you and your doctors' feelings about braces in general. This is a conversation you should have

with your surgeon prior to your last visit with him/her. Remember, just because you've had your ACL reconstructed, it doesn't mean you can't still tear the ligament again the way you did the first time. We tell our patients that while ACL reconstruction is an excellent procedure to get them back to pre-injury level of sports, the reconstruction cannot make their knee *better* than it was originally. For that reason, most patients feel more comfortable wearing a sports brace for at least 1 season upon their return to play, while their strength, stability, and joint proprioception (nerve function) continue to improve.

A recent study presented at the American Orthopaedic Society for Sports Medicine meeting in 2004 showed that of professional skiers who have had ACL reconstructions, those who wore braces when they returned to sports were 2.74 times less likely to injure their knee than those who did not wear braces. This effect was even more pronounced in women: female skiers were 3.4 times more likely to injure their knee again if they did not wear a brace.

**Surgical complication:**

1. Donor site morbidity ( esp. for BPTB autograft )
2. Improper graft harvest
3. Improper tunnel position
4. Improper graft fixation
5. Graft impingement
6. Infection
7. Arthrofibrosis
8. Residual instability

**術後追蹤:**

Rehabilitation after surgery has come a long way in the past ten years. Today, most orthopaedic surgeons begin rehabilitation the day after surgery. Early rehabilitation begins with protected weight bearing, quad setting, straight leg raising, cycling, and guarded knee extensions. The early phase of the recovery is protected to guard against the new ligament pulling loose from the screws that hold it in place. As with any fracture, the bone hole must fill in with new bone before the rehab can become too aggressive. This process takes about six weeks.

Rehab continues to progress during the first six weeks as the patient progresses. Exercises to develop balance, strength and coordination are instituted. These include stork stands, body weight linebacker squats, stair climber, and calf raises. Further progression in the rehabilitation will bring more complex activities such as closed chain terminal knee extensions, leg press, one leg squats, and balance activities with unstable footing.

The second six weeks of the controlled rehab revolves around more complex activities. The activities include complex balance, lateral motion, and greater strength. Activities such as slide board, a progressive running program, one-leg leg press, and balance with very unstable footing can be used.

Near three months post-op the controlled rehab ends, and the patient continues rehab on his/her own. It is very important to continue strengthening the leg during this time. Between three and six months the repaired ACL is at its weakest point. During the first three months the tissue has very limited blood supply and is degrading. The body slowly brings the new blood vessels into the area but not fast enough to stop the degradation process. The athlete must be aware of this so that he/she does not re-tear the ACL. Rehab should continue while avoiding cutting and pivoting.

ACL tears are no longer the end of an athlete's career. If the surgical and rehab techniques used today were available to Gayle Sayers, Joe Namaith, or even any of other affected athletes 20 years ago, their careers would probably have lasted five or ten years longer. The ACL can be repaired with no loss in function or strength. Many athletes return to play stronger and faster than before the injury.

## 脊椎的退化性疾病(Degenerative Disease of the Spine)

### 前言：

“Degenerative”一字意謂著因年齡增長而失去的正常結構或功能。以脊柱來講，退化的速度可因不同職業或不同的部位有所不同。Discs and facet joints 是兩處具有最明顯退化的部位。因為脊柱的退化不同於其它關節，故對於這些變化，我們常特稱為”spondylosis” 而鮮稱為 osteoarthritis.

### Degenerative Process: 3 phases:

1. Phase I– Dysfunction
2. Phase II– Instability
3. Phase III—stabilization

除了 discs 及 facet joints 外，退化的部份尚包括 end-plates 和 ligamentum flavum，這些變化造成 spinal canal and neural foramina 狹窄。

疾病分類：分 Lumbar, thoracic, and cervical 介紹

## LUMBAR SPINE

### Clinical Presentation:

1. Back pain—associated with activity, prolonged sitting
2. Morning stiffness
3. Claudication—neurogenic claudication

Physical Examination: not particularly remarkable

### Diagnostic Evaluation:

1. X-ray: disc space narrowing, osteophyte and syndesmophyte formation, hypertrophy of the facet joints, loss of cartilage space. Segmental instability: 4mm of translation in flexion and extension dynamic view.
2. Computed Tomography(CT): is ideal for imaging the bony anatomy
  - (1). Hypertrophy of facet joints
  - (2). Disc collapses in height
  - (3). Disc bulging
  - (4). Redundancy of the annulus fibrosus
3. Magnetic Resonance Imaging(MRI): most sensitive imaging modality
  - (1). black disc disease” in T2-weighted images
  - (2). bucking, redundancy, and hypertrophy lig. Flavum
  - (3). spinal canal and neural foramina stenosis

4. Discography: provocative test for a degenerative disc
5. Facet Blocks: degenerative disease of the facet joint

### **Treatment:**

1. Nonoperative
  - (1). Avoid repetitive lifting in a forward-flexed posture, exposure to whole-body vibration, and prolonged driving.
  - (2). Quit smoking
  - (3). Strengthening the paravertebral and abdominal muscles – isometric exercise
  - (4). NSAIDs: not intended for long-term use.
  - (5). Lumbosacral orthoses: benefit in patients with segmental instability
2. Operative
  - (1). Fusion: standard surgical approach for degenerative disease of the lumbar spine.
  - (2). Posterior lateral fusion
  - (3). Interbody( post.& ant.)
  - (4). Circumferential fusion

## **THORACIC SPINE**

### **Clinical Presentation**

Midback or interscapular pain: often there is a prior history of trauma

### **Physical examination:**

1. local pain in palpation
2. reproduce pain
  - (1). by flexion→ symptomatic disc
  - (2). by extension → symptomatic facet joint

### **Diagnostic Evaluation:**

1. X-ray: not particularly useful
2. CT scan: hypertrophy facet joints, degenerative disc calcifies
3. MRI: disc desiccation(decreased signal intensity)
4. Discography
5. Facet block

### **Treatment:**

1. Nonoperative
  - (1). Lifestyle modification

- (2). Exercise
- (3). Drug therapy
2. Operative: is rarely necessary in patients without neurologic involvement
  - (1). Ant. Fusion
  - (2). Posterolateral fusion

## **CERVICAL SPINE**

### **Clinical Presentation**

1. Neck pain: may radiate into the shoulder blade, or chest, or up to the skull.
2. may associated headache or blurred vision
3. movement may exacerbate symptoms
4. Arm numbness: nerve root compression
5. referred pain phenomenon

**Physical examination:** spasm of paravertebral, trapezius, or sternomastoid muscles.

### **Diagnostic Evaluation**

1. X-ray: disc space narrowing, ant. osteophytes, arthrosis of the facet joints, and osteophytes from the uncovertebral joints. C<sub>5</sub>-C<sub>6</sub> is the most commonly affected level, followed by the C<sub>6</sub>-C<sub>7</sub> level.
2. CT scan: does not allow optimal evaluation of disc pathology.
3. MRI: powerful tool
  - (1). disc desiccation
  - (2). osteophytes and joint arthrosis
  - (3). pathology may be demonstrable in more than 40% of asymptomatic people over age 40.
4. Discography: controversial
5. Facet block:

### **Treatment**

1. Nonoperative
  - (1). Immobilization
  - (2). Physical therapy: heat, electrical stimulation, and exercise
  - (3). Medication
2. Operative: overall results are not good
  - (1). Ideal candidate: young, single level, and failed nonoperative treatment
  - (2). Relative contraindications: multiple level disease, degenerative changes at levels adjacent to the suspected symptomatic level, and increasing age.
  - (3). Ant. Fusion

**要點：**

1. Degenerative disease of the spine 是脊柱各個部位退化的結果。
2. 雖然在影像上常可看到各種脊柱退化的變化，但是經常是沒有症狀的。
3. 大部份有症狀的 degenerative disease of spine，若無神經症狀，最好勿行手術，尤其是老年人。

**手術前後之評估：**

本院採 VAS scale 及 Oswestry low back pain disability questionnaire, 分別於術前及術後三個月、半年、及一年紀錄。

## 大腳趾外翻骨科處置

### 前言:

1. Definition → Hallux valgus deformity refers to a lateral deviation of the great toe at the first metatarsophalangeal joints. Bunion → the prominent medial eminence that is present in a hallux valgus deformity
3. Hallux valgus → the most common pathologic condition affecting the great toe → most commonly occurs as a combination of genetic predisposition and prolonged wearing of shoes that place abnormal pressure on the 1<sup>st</sup> toe

### Etiology or predisposing factors:

1. Shoes → esp. high-fashion footwear that constricts the forefoot → the primary causative factor for the development of bunion
2. Heredity → esp. in the juvenile form → positive family history has been reported
3. Metatarsus primus varus → medial angulation of the 1<sup>st</sup> metatarsal at the metatarsocuneiform joint → predisposing factor of bunion
4. Systemic arthritides → RA → synovitis causes attenuation of joint capsule and leads to the hallux valgus
5. Flatfeet, Achilles tendon contractures → association of bunions has been hypothesized → severe flatfeet as a result of generalized ligament laxity are more susceptible to bunion
6. Hypermobility of the 1<sup>st</sup> metatarsocuneiform joint → small percentage

### Pathophysiology of bunion deformity

1. Round metatarsal head → less stable than a flatter head → more prone to develop angulation
2. Distal metatarsal articular angle (DMAA) → greatly influence a bunion deformity
3. Joint congruence → Congruent or incongruent
4. Progressive bunion → starts as a normal or minimally angulated MTP joint that is unstable as a result of a round articular surface → Prolonged exposure to valgus force on the first toe, such as occurs with the use of the tight shoes → causes a slight permanent angulation of toe
5. Established valgus angulation → tend to worsen with time → due to the muscular pull of the extensor hallucis longus and adductor hallucis tendons on the proximal phalanx and a valgus stress during the toe-off phase of gait
6. Varus angulation of 1<sup>st</sup> metatarsal shaft → medial joint capsule becomes elongated → lateral joint capsule becomes contracted
7. Sesamoid lateral subluxation → due to sesamoid sling held in place by strong

- attachments of the transverse metatarsal ligament and adductor hallucis m.
8. Nonprogressive joints → bunions → medial eminence causing a painful bursa or impingement on the cutaneous n.
  9. Hallux valgus interphalangeus → valgus angulation between the proximal and distal phalanx of the great toe → tends to be a nonprogressive deformity

**疾病分類:**

1. Adult hallux valgus → incongruent MTP joints → greater increase in HVA and IMA → due in great part to footwear
2. Juvenile hallux valgus → starts in the preteen or teenage → congruent MTP joints with increased DMAA → mildly increase HVA and IMA → higher incidence of hypermobility of metatarsocuneiform joints → primarily inherited
3. Hallux valgus interphalangeus → valgus angulation between the proximal and distal phalanx of the great toe

**According to the severity of deformity:**

1. Mild bunion → HVA < 30°, IMA < 13°
2. Moderate bunion → HVA 30° – 40°, IMA 13° – 20°, incongruent joint, hallux pronated, presses against the 2<sup>nd</sup> toe
3. Severe bunion → HVA > 40°, IMA > 20°, hallux pronated, overriding or underlapping the 2<sup>nd</sup> toe, incongruent joint, transfer metatarsalgia, possible arthritic change

**身體檢查:**

1. Standing to assess the degree of hallux valgus, lesser toe deformity, and posture of the longitudinal arch
2. Evaluation of hindfoot and forefoot when the patient seated
3. Medial prominence → presence of callus or painful bursa?
4. First MTP joint → ROM, Swelling, dorsal spur
5. Joint ROM limited → exostoses → degree of osteoarthritis
6. Plantar surface → local sesamoid pain
7. Neuritic pain → from dorsal or plantar cutaneous nerves → complaint of numbness or tingling
8. Mobility of first metatarsocuneiform joint → more than 7° to 10° of motion
9. Evaluation of joint congruity and flexibility of the deformity
10. Evaluation of lesser toes → Hammer toes, MTP joint instability or dislocation, plantar pain or callosities, esp. underneath the 2<sup>nd</sup> metatarsal head
11. Evaluation of the neurovascular status → check capillary refill and neurologic

examination

**實驗室診斷檢查: (Radiologic Features→ Weight-bearing radiography)**

1. Hallux valgus angle → between lines bisecting the 1<sup>st</sup> metatarsal and proximal phalanx → normal , less than 15 °
2. Intermetatarsal angle → between lines bisecting the shafts of 1<sup>st</sup> and 2<sup>nd</sup> metatarsals → normal , less than 9 °
3. DMAA → measure of the articular surface of the 1<sup>st</sup> metatarsal head as it relates to the long axis of 1<sup>st</sup> metatarsal → normal , less than 10 ° deviation of the articular surface of the metatarsal head
4. Joint congruity → joint surface of the metatarsal head and proximal phalanx → subluxated or not → congruent or incongruent
5. Interphalangeal angle → between lines bisecting the proximal and distal phalanges of the 1<sup>st</sup> toe → normal , less than 10 °
6. Joint arthrosis
7. Severity of the bunion
  - (1). Mild bunion → HVA < 30 ° , IMA < 13 °
  - (2). Moderate bunion → HVA 30 ° – 40 ° , IMA 13 ° – 20 ° , incongruent joint, hallux pronated, presses against the 2<sup>nd</sup> toe
  - (3). Severe bunion → HVA > 40 ° , IMA > 20 ° , hallux pronated, overriding or underlapping the 2<sup>nd</sup> toe, incongruent joint , transfer metatarsalgia, possible arthritic change

**治療: (Medications or conservative treatment)**

1. Footwear modification → wide toe box or open-toed shoes can minimize rubbing over medial eminence
2. Bunion pads, night splints, and toe spacers → tend to be of little use
3. Soft pads → placed underneath the sesamoids or transfer lesions underneath the lesser metatarsal heads
4. Wide or open-toed shoes → when lesser toes deformities combine NSAIDs for pain relief

**Consideration of surgical treatment:**

1. Absolute contraindication

- (1). Active infection of MTP joint
- (2). Poor vascularity
- (3). Unreliable
- (4). Unable to participate in the post-operative regimen of dressing changes

## 2. Relative contraindication

- (1). Mild arthritis or arthrofibrosis
- (2). Unrealistic expectations

## 3. Consideration before operation

- (1). Patient's main complaint, professions, and athletic pursuits
- (2). Physical findings → severity of deformity, the area of max. tenderness, associated lesser toe deformities
- (3). Neurovascular status
- (4). Patient's expectations
- (5). Combined with lesser toe deformity or transfer lesions → correction of the bunion may be the only way to alleviate the problems

## 手術方法及術後追蹤:

### **1. Distal soft tissue procedure → modified McBride procedure → indicated in mild HV → combined with a proximal metatarsal osteotomy to correct moderate to severe deformity**

- (1). Incision made in 1<sup>st</sup> web space → release contracted lateral structure → joint capsule, adductor hallucis tendon, transverse metatarsal ligament
- (2). Medial longitudinal approach and capsulotomy
- (3). Medial eminence remove
- (4). Medial capsule and abductor hallucis tendon suture to keep correct alignment
- (5). Postoperatively → change dressings weekly for 8 weeks → amputation is permitted in a postoperative shoe

### **2. Distal soft tissue procedure with proximal metatarsal osteotomy**

- (1). Soft tissue procedure performed as described above
- (2). Metatarsal osteotomy is carried out through a 3rd incision over the dorsal base of the 1st metatarsal ( Scarf procedure → elongation of the medial incision to TMT joint)

- (3). Proximal osteotomy → most common type is crescent-shaped ( Scarf procedure → Z shape double chevron osteotomy)
- (4). Rotate the metatarsal head laterally as the metatarsocuneiform joint pushed medially ( Scarf procedure → plantar fragment laterally and dorsal fragment medially)
- (5). Stabilization with screws
- (6). Postoperative care → same as distal soft tissue procedure

### **3. Distal Osteotomy**

#### **Chevron procedure**

- (1). Midline medial incision → capsule opened → medial eminence removed
- (2). Chevron-shape ( sideways V) cut is made
- (3). Metatarsal head translated laterally 3-4 mm
- (4). Medial bony prominence excised
- (5). Osteotomy site fixed with a pin or screw
- (6). Postoperatively → change dressings weekly to 6-8 weeks

#### **Mitchell procedure**

- (1). Midline medial incision → capsule opened → medial eminence removed
- (2). Step-cut osteotomy performed proximal to the metatarsal head
- (3). Distal fragment translated laterally
- (4). Metatarsal head can be rotated to correct a mild increased DMAA and plantar flexed to compensate for shortening
- (5). Osteotomy site fixed with heavy suture, wire or K-wire
- (6). Postoperatively → keep non-weight bearing for 3 weeks → dressings changed for 8 weeks

#### **Akin procedure**

- (1). Straight medial approach over the base of proximal phalanx
- (2). Small ( 2-3 mm) medially based wedge of bone removed
- (3). Osteotomy site closed down manually → stabilized with sutures, K-wire, or minifragment screw
- (4). Medial joint capsule plicated
- (5). Usually combined with a chevron osteotomy or simple removal of the medial eminence
- (6). Postoperatively → Dressings applied for 6-8 weeks

#### **Keller procedure ( Resectional arthroplasty)**

- (1). Removal of proximal 1/3 of the proximal phalanx → decompress the MTP joint
- (2). Plantar plate and medial capsular structures are reapproximated to the remain base of the proximal phalanx

- (3). Medial eminence excised
- (4). Longitudinal pin used to stabilize for 4-6 weeks
- (5). Postoperatively → permitted ambulation in a postoperative shoe → dressings changed for 6 weeks to maintain alignment