

4 Avoid Intramedullary Canal Drilling 避免骨髓腔鑽孔

Through an optical positioning system, the orthopedic surgeon can monitor the patient's knee joint position in real-time 3D space and accurately locate the bone structure, effectively reducing the intramedullary canal drilling caused by traditional instruments.

- + Positioning use: Medical-grade optical lens
- + Avoid intramedullary canal drilling
- + 3D simulated bone model: Paired with virtual planning

透過光學定位系統，骨科醫生能夠在3D空間中即時監測患者膝關節的位置，以及為骨骼的結構進行定位，有效減少傳統器械所造成的骨髓腔鑽孔。

- + 定位使用：醫療級光學鏡頭
- + 避免骨髓腔鑽孔
- + 3D仿真骨模型：搭配虛擬規劃

4 Reduce Ligament Tissue Injury 減少韌帶組織傷害

Through quantitative joint space data, the ligament and soft tissue tension is recorded by the robotic system. The intraoperative planning can allow adjustment and personalization of bone cut and artificial joint position, which effectively reduce soft tissue damage and promoting postoperative pain relief.

- + Personalized fine-tuning and adjustment of artificial joint
- + Promotes reduced postoperative pain
- + Real-time ligament and soft tissue evaluation system
- + Reduce ligament and soft tissue injury

透過對關節間隙的數據化分析，韌帶軟組織的鬆緊程度會被機械臂系統記錄下來。透過術中規劃可以對切骨及人工關節位置作出調整，從而減少軟組織的損害，進而促進術後疼痛的減緩。

- + 對人工關節作個人化調整
- + 促進降低術後疼痛
- + 即時韌帶軟組織評估系統
- + 減少韌帶軟組織傷害

4 Improve Cutting Precision 提高切割精準度

The medical-grade robotic, coupled with advanced optical positioning systems, aims to fully capture the subtle movements of the knee during surgery, real-time monitoring of the patient's knee, and helping to accurately position the artificial joint.

- + Medical-grade robotic
- + Improve safety
- + Advanced optical positioning system
- + Margin of error < 0.1 cm

醫療級數精密機械臂搭配先進光學定位系統，完整捕捉術中膝蓋的些微移動，即時監測到患者的膝關節，幫助精準置放人工關節。

- + 醫療級數精密機械臂
- + 提高安全性
- + 先進光學定位系統
- + 誤差度<0.1公分



4 Hospital Introduction 醫院簡介



The Hong Kong Adventist Hospital – Stubbs Road established the Robotic Surgery Center in 2024. The center provides robotic arm-assisted surgical services for various diseases, including orthopedic surgery, cancer surgery, and others, offering patients more advanced and precise treatment. The hospital's experienced orthopedic specialists, along with a professional medical team, are able to cater to and care for the needs of patients.

香港港安醫院—司徒拔道於2024年成立機械臂外科中心，中心為各種疾病提供適合的機械臂輔助手術服務，包括骨科手術、癌症手術等，為患者提供更先進、更精準的治療。本院的骨科專科醫生經驗豐富，加上專業的醫護團隊，能體貼和關懷病人需要。



Map 路線圖



Hong Kong Adventist Hospital – Stubbs Road 香港港安醫院—司徒拔道

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Service Information
服務詳情



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SR-ORTH-2024003 2025/05 Revised 修訂

Extending the Healing Ministry of Christ
延續基督的醫治大能

Adventist 港
Health 安
Hong Kong Adventist Hospital • Stubbs Road
香港港安醫院 • 司徒拔道



Robotic Surgery Center Robotic Assisted Total Knee Replacement Surgery

機械臂外科中心
機械臂輔助
全膝關節置換手術



Robotic Assisted Total Knee Replacement Surgery

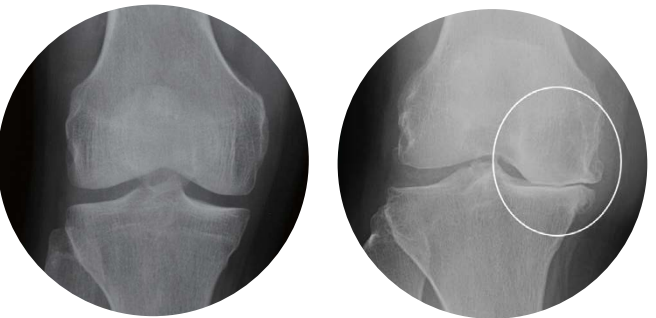
Robotic Assisted Total Knee Replacement Surgery

Robotic Assisted Total Knee Replacement Surgery

4 Understanding Knee Degeneration and Osteoarthritis
認識膝關節退化性關節炎

As we age, the knee may develop pathological changes and wear due to overuse, leading to pain and even difficulty with daily activities. Through professional diagnosis by orthopedic surgeon, advanced techniques and materials can be used to replace the joint with an artificial one, relieving the patient's pain and restoring their daily functional ability.

隨著年紀漸長，膝關節可能因過度使用而老化，產生病變及磨損，導致疼痛甚至無法應付日常起居。經由骨科醫生專業診斷下，可運用先進的技術及物料，為患者置換人工關節，以減輕患者疼痛並恢復其日常活動的能力。



Normal joint space
Healthy articular cartilage
正常關節間隙
關節面軟骨健康

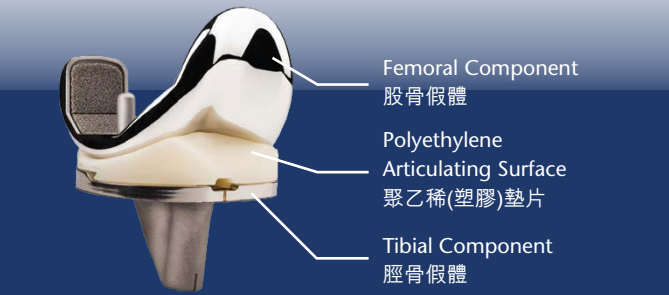
Narrowed joint space
Worn articular cartilage
關節間隙變窄
關節面軟骨磨損

4 What is Total Knee Replacement
何謂全膝關節置換

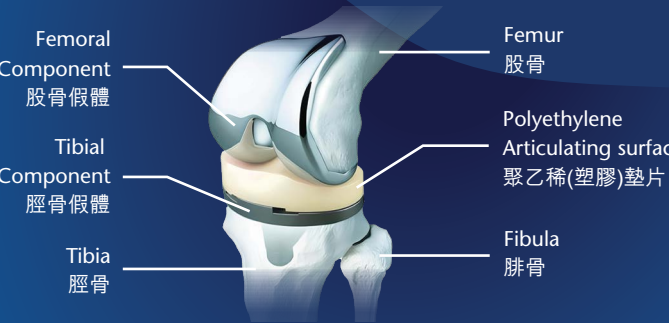
Once the knee develops a pathological condition, the joint space narrows, and the articular cartilage is worn down and damaged, leading to pain and even deformity. The common causes include osteoarthritis, rheumatoid arthritis, post-traumatic arthritis, and osteonecrosis etc.

If the joint disease becomes severe, and conservative treatment is ineffective, the orthopedist will select the most appropriate knee replacement based on the patient's knee joint condition. The affected bone is removed, and it is replaced with metal. The cartilage portion is substituted with high-molecular-weight polyethylene, eliminating the direct friction of the metal surfaces.

一旦膝關節出現病變，關節間隙變窄、關節面軟骨磨損破壞導致疼痛甚至變形，常見的原因有退化性關節炎、類風濕關節炎、創傷性關節炎、骨壞死等。一旦關節病變嚴重，在保守治療無效的情形下，骨科醫生會依患者的膝關節狀況選擇最適合的膝關節置換，將受病變影響的骨骼移除，並以金屬取代，軟骨部分則由高分子聚乙烯替換，免除金屬面的直接摩擦。



Total knee replacement implant with a polyethylene articulating surface (plastic tray) placed between the metal femoral component and tibial component. 人工膝關節由三個主要部份組成，包括金屬股骨假體以及脛骨假體，中間的為聚乙烯(塑膠)墊片。



4 How to Choose a Total Knee Replacement Surgery
如何選擇全膝關節置換手術

When selecting an artificial knee joint, the orthopedic surgeon's professional assessment is generally the basis. The orthopedic surgeon takes into consideration of various aspects, such as the product's functionality and lifespan, in order to choose the most suitable artificial knee joint for the patient.

揀選膝關節產品時，一般經由骨科醫生的專業判斷，從產品的功能、使用年限多方面作出考慮，為患者選擇最合適的人工膝關節。

	Traditional Total Knee Replacement 傳統全膝關節置換	Total Knee Replacement 全膝關節置換	Personalized Total Knee Replacement 個人化全膝關節置換
Product Era 產品年代	1994	2005	2018
Wear Resistance 耐磨功能	General 一般	Moderate 中	High 高
Antioxidant Function 抗氧化功能	None 無	None 無	Antioxidant Function 含抗氧化功能
Femoral Size 股骨尺寸	General 一般		Closer to Asian Anatomy 較為符合亞洲人版型

4 Evolution of Knee Replacement Surgery
膝關節置換術演進

	Traditional Instrument Surgery 傳統器械手術	Computer Navigation Surgery 電腦導航手術	Robotic Surgery 機械臂輔助手術
Positioning Method 定位方式	Instruments 器械	Optical 光學	Optical 光學
Preoperative 3D Digital Planning 數位3D 術前規劃	×	×	✓
Ligament Tension Assessment 評估韌帶鬆緊度	Surgeon Dependent 取決於外科醫生的經驗	Surgeon Dependent 取決於外科醫生的經驗	Quantitative Data Analysis by Robot 利用電腦進行數據化分析
Cutting Assistance 切割輔助	Traditional Instruments 傳統手動切骨工具	Traditional Instruments 傳統手動切骨工具	Robotic 機械臂
Accuracy of Bone Cut and Implant Placement 切骨及假體位置精準度	Surgeon Dependent 取決於外科醫生的經驗	Accurate 精準	Accurate 精準
Blood Loss 出血量	General 一般	General 一般	Less 較少
Soft Tissue Trauma 軟組織創傷	More 較多	General 一般	Less 較低
Length of Stay 住院時間	Longer 較長	Longer 較長	Shorter 較短
Postoperative Pain 術後疼痛	More 較多	More 較多	Less 較少
Recovery Speed 恢復速度	General 一般	General 一般	Faster 較快

4 Why Consider Using a Robotic
為什麼需要考慮使用機械臂

After the professional diagnosis and selection of the appropriate artificial joint for the patient, an orthopedic surgeon will perform joint replacement surgery to implant the artificial joint to patient's body. The robotic arm provides stable, precise, and highly reproducible cutting, which can help the orthopedic surgeon to perform the surgery more accurately. At the same time, it reduces soft tissue injury and preserves more normal bone, thereby improving early postoperative outcomes.

- + Helps in a faster return to daily life
- + Shortens hospital stay
- + Reduces complications/blood loss
- + Decreases postoperative pain

通過專業診斷，挑選適合患者的人工關節後，骨科專科醫生會進行關節置換手術將人工關節置入病人體內。而機械臂提供穩定、精確的切割，有助骨科醫生更精確地執行手術。同時，減少軟組織傷害和保留更多正常骨骼，進而提升術後康復效果。

- + 幫助快速回到日常生活
- + 縮短住院時間
- + 減少併發症/ 失血量
- + 降低術後痛楚





Robotic Assisted Total Knee Replacement Surgery

Robotic Assisted Total Knee Replacement Surgery

 Package	Length of Hospital Stay	Price
Robotic Assisted Total Knee Replacement Surgery (Unilateral)	5 Days 4 Nights	\$102,000

Package includes:

- + Operating room charges including equipment, consumables, implants and instrument
- + Medication during operation and inpatient
- + Discharge medication
- + Basic consumables or materials charges
- + Related test / imaging
- + Accommodation charge for standard room (5 days, 4 nights)
- + Physiotherapist assessments conducted during hospitalization, along with physiotherapy sessions provided once daily
- + Pre-operation comprehensive assessment

Package excludes:

- + Doctor procedure fee
- + Doctor ward round fee
- + Anesthesiologist fee
- + Hospital inpatient care
- + Meals and personal consumables used during hospital stay
- + Changing bed within the same grade of accommodation
- + Additional operation charges, medication, diagnostic procedures, doctor's fee unrelated to the package operation
- + Any charges or services before actualisation of package and after patient discharge
- + Any lab test, treatment, medication, procedures fee related to pre-existing condition
- + Pre-operative diagnostic procedure charges
- + Emergency services or additional fees generated as a result of complications arising from treatment
- + Intensive care and re-operation charges
- + Extended hospital stay and additional fees incurred as a result of extended hospital stay, such as accommodation charge, medication, and nursing care fees

Appointment and Enquiries

 : (852) 6463 0638  : (852) 3651 8990  : www.hkah.org.hk

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2. Physicians must complete the required training and credentialing process to obtain Robotic Assisted Surgery Clinical Privileges before they are authorized to perform robotic surgery.

2025/05 Revised



機械臂輔助全膝關節置換手術

A 機械臂輔助全膝關節置換手術

A 計劃	住院日數	費用
機械臂輔助全膝關節置換手術 (單膝)	5日4夜	\$102,000

手術套餐包括以下內容：

- + 手術室費用，包括設備、消耗品、植入物和儀器
- + 手術期間和住院期間的藥物
- + 出院藥物
- + 基本耗材或材料費用
- + 相關檢查/影像
- + 標準房間住宿收費 (5日4夜)
- + 住院期間的物理治療師評估，以及每日一次的物理治療
- + 術前綜合評估

手術套餐不包括以下內容：

- + 醫生手術費
- + 醫生巡房費
- + 麻醉科醫生收費
- + 醫院住院護理
- + 住院期間的膳食和個人消耗品
- + 同等級病房內的換床費
- + 與套餐手術無關的其他手術費用、藥物、診斷檢查、醫生費用
- + 在套餐生效之前和患者出院之後發生的任何費用
- + 與既往病史相關的任何化驗、治療、藥物、費用
- + 術前診斷檢查費用
- + 因治療引起併發症而產生的急救服務或額外費用
- + 加護病房和二次手術費用
- + 因住院時間延長而產生的額外費用，如房間住宿收費、藥物費、護理費等

預約及查詢

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2. 醫生必須完成所需的培訓和資格認證過程，並獲得機械臂輔助手術臨床權限，方可被授權操作機械臂手術。

2025/05 修訂



機械臂輔助全膝關節置換手術