Benefits of Robotic Assisted Hip Replacement Surgery
機械臂輔助髖關節置換手術的好處

- **Preoperative Planning:** Accurate and detailed planning of the artificial joint size and position is achieved through a 3D bone model, allowing for simulation of surgical outcomes.
- **High Precision:** The accuracy of prosthesis placement is significantly improved to 98%, much higher than the approximately 80% achieved in traditional surgeries.
- **Increased Safety:** Through preoperative planning, the surgeon can lock in the depth and boundaries of the robotic bone resection. The haptic feedback control system can avoid errors during bone resection, reducing risk of damaging surrounding nerve, blood vessels and soft tissues.
- **Fewer Complications:** The risk of postoperative hip dislocation is significantly lowered by up to four times, and issues like leg length discrepancy are minimized.
- **Faster Recovery:** Due to less surgical trauma and bleeding, patients experience less postoperative pain and recover more quickly, with many able to get out of bed on the same day of the surgery, reducing hospital stays.

- **術前規劃:** 透過術前三維骨模型準確詳細規劃人工關節尺寸和位置，模擬手術效果。
- **精準度高:** 假體放置準確性大幅提升至98%，遠高於傳統手術的約80%

- **安全性高：**通過術前規劃，醫生可以鎖定機械臂截骨的深度及邊界，觸覺反饋系統可減少截骨時的誤差，減少對周邊神經、血管及軟組織損傷的風險。
- **減少併發症：**能顯著降低術後「甩骹」（關節脫位）風險達四倍，並減少「長短腳」情況。
- **加快復原：**因創傷更小，出血少， 患者術後痛楚較輕，康復速度更快，大多可於手術當日下床活動，縮短住院時間。

Postoperative Care Considerations
手術後應注意事項

The success of the surgery is equally dependent on postoperative care:

- **Consistent Rehabilitation Exercises:** Regularly perform the exercises taught during hospitalization to strengthen muscles and restore joint mobility.
- **Use of Assistive Devices:** In the early stages of recovery, use walking aids or canes as instructed.
- **Watch for Warning Signs:** If the surgical site shows signs of redness, swelling, heat, pain, or discharge, or if there is a fall impacting the hip, contact the doctor immediately.

Different treatment options have their own effectiveness, side effects, and risks. Patients should discuss in detail with their primary physician to choose the most suitable plan for their needs.

手術成功與否，術後護理同樣重要。

- **堅持復健運動:** 定期進行住院期間所教導的運動，以強化肌肉及恢復關節活動度。
- **使用輔助工具：**在康復初期，按指示使用助行架或枴杖。
- **留意警號:** 如傷口出現紅、腫、熱、痛、流膿，或不幸跌倒撞及髖部，應立即聯絡醫生。

不同治療方案各有其成效、副作用及風險，患者應與主診醫生詳細商討，選擇最適合自己的方案。

Hospital Introduction
醫院簡介

The Hong Kong Adventist Hospital - Stubbs Road established the Robotic Surgery Center in 2024. The center provides robotic 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。

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Robotic Surgery Center
Robotic Assisted Hip Replacement Surgery
機械臂外科中心
機械臂輔助髖關節置換手術

Introduction to Hip Arthritis
髖關節炎簡介

The hip joint consists of a spherical femoral head and a cup-shaped acetabulum, connecting the pelvis and the femur. Hip arthritis occurs when the cartilage wears down due to degeneration, inflammation, or injury. Patients typically experience joint pain and stiffness, significantly affecting their daily activities, such as walking, sitting, or standing. Symptoms like redness and heat are often less noticeable because the hip joint is surrounded by a thick layer of muscle.

髖關節由球形股骨頭和杯狀髖臼組成，是盆骨和大腿骨相接的關節。當髖關節因退化、炎症或創傷等原因導致軟骨磨損，就會引發髖關節炎。患者會感到關節疼痛及僵硬，日常活動能力大受影響，例如步行、坐下或站起都感到困難。由於髖關節被厚厚的肌肉層包裹，紅腫發熱等症狀通常較不明顯。

Normal Hip Joint
正常髖關節

Early Hip Arthritis
早期髖關節炎

Advanced Hip Arthritis
嚴重髖關節炎

Common Causes of Hip Arthritis
髖關節炎的常見成因

According to local studies, the most common causes include:

- Avascular Necrosis of the Femoral Head : This is the leading cause of hip replacement surgery among patients. It occurs when blood supply to the femoral head is blocked, leading to necrosis. Alcohol abuse has been identified as the most common factor contributing to this condition.
- Degenerative Arthritis: As people age, the cartilage in the joints gradually wears down.
- Rheumatoid Arthritis
- Congenital Hip Dysplasia

根據本港研究，最常見的成因包括：

- 缺血性股骨頭壞死（俗稱「骨枯」）：這是本港患者接受髖關節置換手術的最常見病因。股骨頭因血液供應受阻而壞死，其中酗酒被研究證實是引發骨枯的最常見因素。
- 退化性關節炎： 隨著年齡增長，關節軟骨逐漸磨損。
- 類風濕關節炎
- 先天性髖關節發育不良

Normal Hip Joint X-ray
正常髖關節X光

Hip Osteoarthritis X-ray
退化性髖關節炎X光

Typical Symptoms
典型病徵

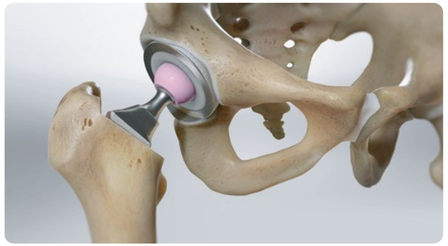
If you experience the following symptoms, it may indicate a problem with the hip joint:

- Groin Pain: Pain in the front of the groin area, where the abdomen connects to the thigh.
- Pain with Movement: Difficulty and pain when taking steps, bending over, sitting down, or standing up.
- Joint Stiffness: Especially in the morning or after prolonged sitting, the joint may feel stiff and less mobile.
- Limping: An unconscious change in gait due to pain.
- Limited Mobility: Difficulty performing daily activities, such as putting on shoes and socks or trimming toenails.
- Leg Length Discrepancy: A sensation that the lengths of the legs are uneven.

如果出現以下症狀，可能是髖關節出現病變的信號：

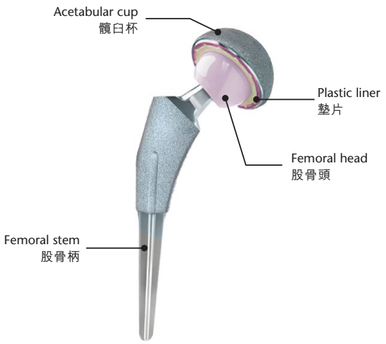
- 腹股溝疼痛： 腹股溝前方（即腹部連接大腿的位置）感到疼痛
- 活動時痛楚： 每行一步、彎身、坐下或站起來時感到困難和痛楚
- 關節僵硬： 特別是早晨或久坐後，關節活動不靈活
- 跛行： 因疼痛而不自覺地改變步姿
- 活動受限: 難以進行日常動作，如穿鞋襪、剪腳甲
- 長短腳: 感覺雙腿長度不一

Understanding Hip Replacement
認識人工髖關節置換術



When the hip joint is severely damaged and neither medication nor physical therapy effectively alleviates pain, a doctor may recommend hip replacement. During the procedure, the damaged femoral head and acetabular cartilage are removed and replaced with artificial implant made from metal alloys, ceramics, and wear-resistant plastic (polyethylene). This surgery aims to eliminate pain and restore joint function. Currently, over 95% of artificial joints can last up to 10 years, with about 90% lasting up to 20 years. With proper care, artificial hip joints can potentially be used for a lifetime.

當髖關節嚴重受損，藥物或物理治療均無法有效緩解疼痛時，醫生有可能建議進行人工髖關節置換術。手術會將已損壞的股骨頭和髖臼軟骨切除，換上由合金、陶瓷及耐磨塑料(聚乙烯)製成的人工關節組件，從而消除痛楚，恢復關節功能。現時有逾95%的人工關節的使用壽命可達10年，而有約 90% 的人工關節使用壽命可達 20 年，只要保養得宜，人工髖關節能夠終生使用。



Robotic Assisted Hip Replacement Surgery
機械臂輔助髖關節置換手術

Traditional hip replacement surgery often relies on 2D X-ray images for preoperative planning, which can lead to errors. Moreover, the surgery primarily depends on the surgeon's manual skills for procedures such as bone resection, reaming, and component placement. The introduction of robotic assisted hip replacement surgery combines advanced technology to provide patients with a more precise and safer treatment option.

傳統人工髖關節置換術以平面的X光影像作術前規劃，或會引致誤差；而且手術主要靠醫生人手進行截骨、打磨及裝嵌等程序。現時引入的機械臂輔助髖關節置換手術，結合先進科技，為患者提供更精準、安全的治療選擇。

Overview of the Surgical Process
手術過程簡介

1. Preoperative 3D Planning: Prior to the surgery, the patient undergoes a CT scan, which is used to develop a pre-operative 3D computer model of the patient's anatomy. The doctor can then plan the specific size and positioning of the acetabular cup and femoral stem based on the individual patient's actual conditions.
2. Precise Execution: During the surgery, the robotic arm, controlled by the surgeon, performs the bone reaming and placement of the prosthesis. Its navigation system ensures that angles and positions are precisely accurate.
3. Safety Features: The robotic arm is equipped with a haptic feedback control system that immediately stops operations if there is any deviation from the planned procedure. This minimizes the risk of errors during osteotomy and reduces damage to surrounding soft tissues and bleeding.

1. 術前 3D 規劃: 病人會進行電腦掃描，用於制定術前立體三維電腦掃描影像。醫生可以根據病人實質情況，具體而準確的計劃髖臼和股骨假體的尺寸和位置。
2. 精準執行: 手術時，機械臂在醫生操控下進行打磨和置入假體，其導航系統能確保角度和位置精確無誤。
3. 安全防護：機械臂配有觸覺反饋系統，若操作偏離預定計劃會即時停止，避免手術期間截骨時的誤差，減少對周圍軟組織的損傷及出血情況。