

血友病患者關節置換 Total Joint Replacement in Hemophilic Arthropathy



香港血友病會
第九週年
會員大會
HKHS 9TH AGM

香港血友病會第九週年會員大會

時間	內容
14:00 - 15:00	第九週年會員大會
15:00 - 15:15	世界血友病聯盟世界會議開幕本2014會後分享
15:15 - 16:00	茶會
16:00 - 16:45	換股講座：醫生，我係時要換股嗎？ 鍾廣賢醫生 威爾斯親王醫院矯形外科及創傷科副顧問 論壇：血友病人關節處理 鍾廣賢醫生 威爾斯親王醫院矯形外科及創傷科副顧問 王紹明醫生 香港中文大學內科及藥劑學系血液科主治 李偉生醫生 香港中文大學外科系泌尿科副顧問 陳潔蓮女士 威爾斯親王醫院血液科(內科) 陳潔蓮小姐 威爾斯親王醫院—核醫學部 劉耀文先生 藥劑師
16:45 - 17:30	

日期：2015年4月12日(星期日)
時間：下午2時至6時
地點：醫院管理局大會堂樓上禮堂

報名或查詢：致電3998 3624 (區焯堃Kenny) 或 電郵至 office@haemophk.org.hk

鍾廣賢醫生
威爾斯親王醫院
矯形外科及創傷科

為什麼血友病患者會出現關節病變？

Pathogenesis

- 血友病
 - 遺傳性血液凝固異常的疾病
 - 容易出血
 - 難於止血

- 關節內出血，關節積血 repeated hemarthrosis
- 關節滑膜 synovium:
 - 關節滑膜增生 synovial hypertrophy
 - 含鐵血黃素沉積 hemosiderin deposit
 - 慢性滑膜炎 chronic synovitis
- 軟骨 cartilage:
 - 酶破壞軟骨 lysozomal enzyme from synoviocytes
 - 關節液異常 abnormal synovial fluid

- 由於減少使用 disuse:
 - 肌肉萎縮 muscle atrophy
 - 關節攣縮 joint contracture
 - 骨質疏鬆 osteopenia
- 血友病關節病 hemophilic arthropathy

病徵和症狀 signs & symptoms

- 關節痛楚、疼痛
- 關節腫脹
- 關節僵硬、攣縮、不能完全伸直、活動範圍減少
- 關節變得不穩定
- 關節附近的肌肉變得軟弱乏力
- 活動時引起痛楚
- 關節不能負重
- 隨著時日，幾乎所有關節內的軟骨被破壞，關節更有時甚至不能活動

哪個關節最受影響？

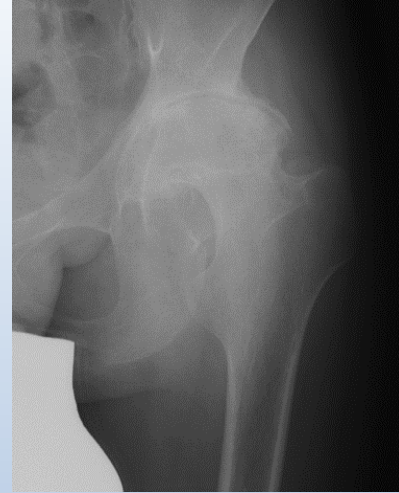
膝關節 (44%)



肘關節 (25%)



踝關節 (14.5%)



髖關節



肩關節

- 但，關節置換手術主要涉及下肢關節
- (髖關節，膝關節 +/- 踝關節)

- 因為下肢需要負重，病徵多較嚴重
- 下肢關節置換手術技術較成熟

預防勝於治療

Management before surgery

- 急性治療 vs 慢性治療 acute vs chronic
- 減輕痛楚、消腫 pain & swelling control
- 凝血因子注射 factor replacement
(prophylactic / on demand)
- 物理治療 physiotherapy
 - 增加關節活動範圍、增強肌力
- 心理支援 psychological support

手術治療 Surgical management

- 關節滑膜切除 Synovectomy (open, arthroscopy, chemical, radioactive) -> treat chronic synovitis
- 截骨重組 Realignment osteotomy
- 關節置換 Joint replacement
- 關節融合 Arthrodesis

關節置換的目的

Aim

- 1) 緩解疼痛 Pain relief
- 2) 改善日常生活 Improved function

全膝關節置換

Total Knee Replacement

- 股骨組件 Femoral component
- 脛骨組件 Tibial component
- 髌骨組件 Patellar component



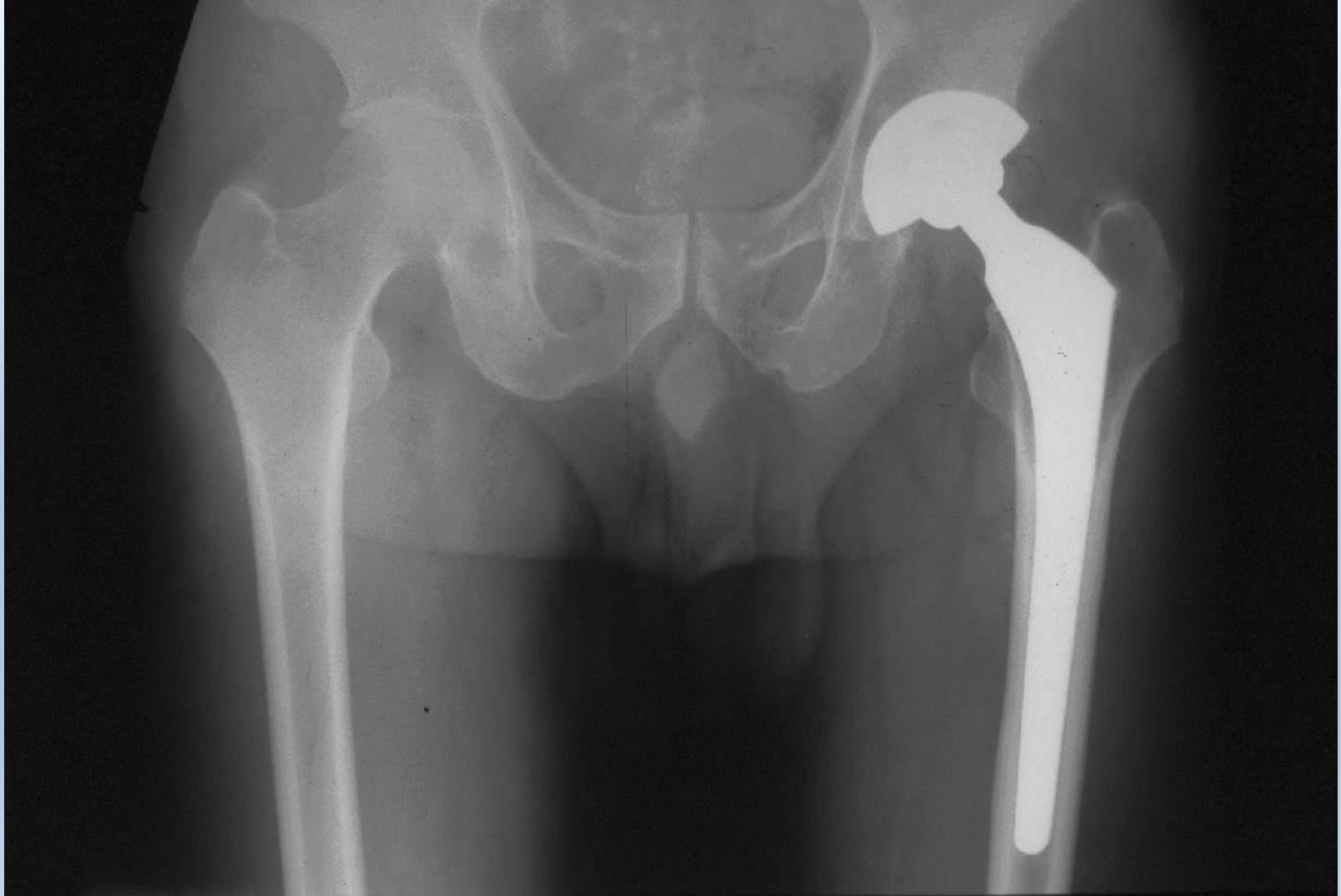
全髖關節置換

Total Hip Replacement

- 股骨柄 Femoral stem
- 髖臼杯 Acetabular cup

全髖關節置換

Total Hip Replacement



- 全踝關節置換 Total Ankle Replacement
- 全肘關節置換 Total Elbow Replacement
- 全肩關節置換 Total Shoulder Replacement

全膝關節置換成效

- Panotopoulos J J Arthroplasty 2014
 - Hospital for Special Surgery score: 45-> 85 ,28 excellent, 7 good
- Atila B Haemophilia 2012
 - Hospital for Special Surgery score: 27.85 -> 79.42
- Chiang CC Haemophilia 2008
 - Knee society pain score: 7.1 -> 48
 - Knee society function score: 42 -> 77.1
- Legroux-Gerot I Joint Bone Spine 2003
 - 94% excellent
- Goddard NJ JBJS Br 2010
 - Hospital for Special Surgery score, 95% good or excellent

全髖關節置換成效

- Lee SH Haemophilia 2015
 - Harris Hip Score 57 -> 94
- Habermann SICOT 2007
 - Harris Hip Score 48 -> 89
- Heeg Haemophilia 1998
 - Harris hip score 36 -> 85

病人滿意關節置換手術嗎？

Haemophilia



Haemophilia (2011), 1–8

DOI: 10.1111/j.1365-2516.2011.02579.x

ORIGINAL ARTICLE

Clinical outcomes and patient satisfaction following total joint replacement in haemophilia – 23-year experience in knees, hips and elbows

K. WANG,* A. STREET,† A. DOWRICK* and S. LIEW*

*Departments of *Orthopaedic Surgery and †Haematology, Alfred Hospital, Melbourne, Vic, Australia*

	Satisfaction with pain relief (% very satisfied)	Satisfaction with functional improvement (% very satisfied)	Overall satisfaction with operation (% very satisfied)	Would undergo the operation again?
All joints (<i>n</i> = 42)	76	50	60	88
TKR (<i>n</i> = 23)	83	52	57	91
THR (<i>n</i> = 13)	85	62	69	92
TER (<i>n</i> = 6)	67	33	50	67

血友病患者關節置換的特殊考慮

Special Considerations

- 多個關節受影響 multiple joints involvement
- 手術期間的處理 peri-operative management
- 假體存活率 prosthesis survivorship
- 假體受感染 prosthesis infection
- 人類免疫缺陷病毒的影響 impact of HIV
- 丙型肝炎病毒的影響 impact of HCV
- 關節活動範圍 range of motion
- 血栓塞的預防 thromboembolism prophylaxis
- 凝血因子抗體 clotting factor inhibitor
- 術後注意事項 post-operative precautions

多個關節受影響

手術期間的處理

peri-operative management

- 全身麻醉 vs 脊髓麻醉
- General anaesthesia vs spinal anaesthesia

麻醉方法

脊髓麻醉

- 出血
 - 椎管血腫
 - 脊髓受壓
 - 下身癱瘓
- 一般考慮全身麻醉

出血處理 Bleeding Management

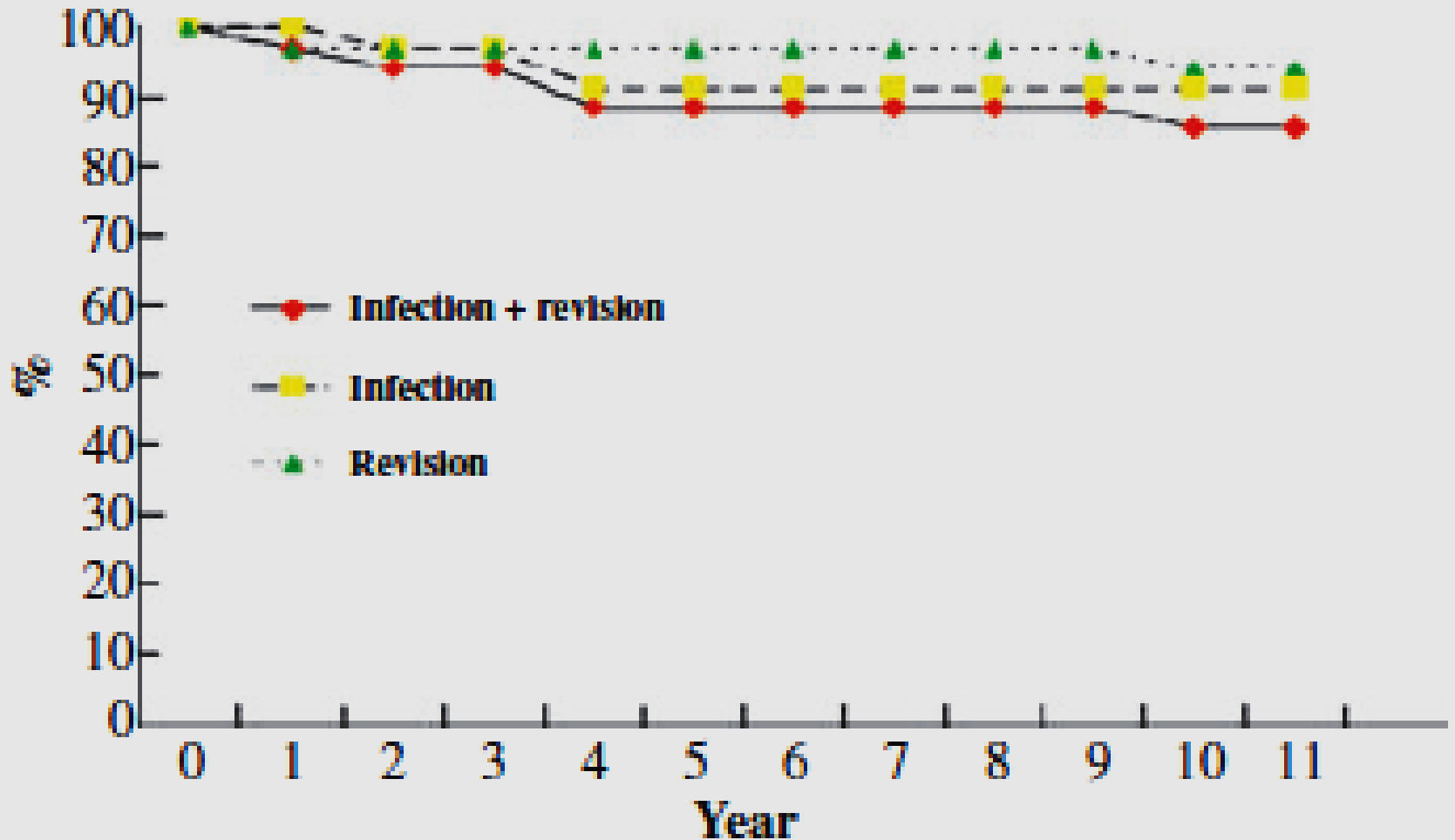
- 凝血因子注射
 - Continuous vs bolus
1. 世界血友病聯盟指引
術前凝血因子水平**120%**逐漸減小至術後2週 **50%**
 2. 術後2週維持凝血因子水平在 **100%**

假體存活率

Prosthesis Survivorship

- 患者一般比較年輕 younger age
- 全膝關節置換
 - 平均年齡: 35-45歲 (Carlos E Expert Rev Hematol 2013)
 - 退化性關節炎: 65-70歲
- Panotopoulos J J Arthroplasty 2014: 40.7歲 (20-58)
- Atilla B Haemophilia 2012: 34歲
- Chiang CC Haemophilia 2008: 34.2歲(23.4-47)
- Legroux-Gerot I Joint Bone Spine 2003: 39歲 (22-51)
- Goddard NJ JBJS Br 2010: 43歲 (25-70)

Kaplan-Meier Survivorship Curve



為何需要翻修手術?

1. 假體受感染 prosthesis infection
2. 無菌性鬆動 aseptic loosening
3. 關節磨損 wear

Table 1. Prosthetic lifespan in hemophiliac patients (percentage of primary total knee replacement removal-free survival).

Study (year)	Percentage of TKR removal-free survival	Ref.
Solimeno <i>et al.</i> (2009)	81 at 7 years	[20]
Cohen <i>et al.</i> (2000)	88.4 at 10 years	[21]
Sikkema <i>et al.</i> (2011)	94 at 20 years	[22]

TKR: Total knee replacement.

Goddard <i>et al.</i> (2010)	94% at 20 years
Panotopoulos <i>et al.</i> (2014)	86.4% at 15 years

Table 2
Summarized Data of the Literature.

Publication	Year	Number of Prostheses	Follow Up	Infection	Aseptic Complication
Zingg et al	2012	34	9,6 (2-20) y	3 (8,8%)	3 (8,8%)
Goddard et al	2010	70	9,2 (2-23) y	1 (1,4%)	6 (8,6%)
Solimeno et al	2009	116	5,1 (2,9-7,5) y	9 (7,6%)	7 (6,0%)
Silva et al	2005	90	7,8 (1,4-25,7) y	14 (15,6%)	12 (13,3%)
Norian et al	2002	53	110 (24-246) m	7 (13,2%)	2 (3,8%)
Chiang et al	2008	35	82,2 (12-218) m	3 (8,6%)	1 (2,8%)
Karthaus et al	1988	11	3,75 (2-8) y	0	0
Kjaersgaard-Andersen et al	1990	13	43 m	0	0
Thomason et al	1999	23	7,5 y	4 (17,4%)	1 (4,3%)
Goldberg et	1981	13	2-6,5 y	1 (7,7%)	1 (7,7%)
Sheth et al	2004	14	77 (25-159) m	1 (7,1%)	0
Bae et al	2005	25	6,2 y	0	0
Figgie et al	1989	19	9,5 y	1 (5,3%)	3 (15,8%)
Rodriguez-Merchan	2007	35	7,5 (1-10) y	1 (2,6%)	0
Rahme et al	2011	20	66,5 (6-134) m	2 (10%)	1 (5%)
Atilla et al	2011	21	5,7 (2-9) y	1 (4,8%)	2 (9,5%)
Authors	2012	45	88,7 (24-232) m	2 (4,4%)	4 (8,8%)
Total		637		50 (7,8%)	43 (6,7%)

假體存活率

Prosthesis Survivorship

- 全髖關節置換

Lee SH et al (Haemophilia 2015)	95.2% at 10 years
Miles et al (Haemophilia 2008)	80% at 7.5 years
Habermann et al (SICOT 2007)	86.7% at 11 years

假體存活率

Prosthesis Survivorship

- 全踝關節置換

Table 1. Survival rates for total ankle replacement (TAR) in the general population according to literature (2005–2013).

Author	Survival at		
	5 years	10 years	14 years
Stengel [5]	90.6%	–	–
Zhao [6]	85.9%	71.1%	–
Henricson [7]	81%	69%	–
Anghong [8]	–	–	77%

Table 2. Rates of complications, failures and revision for total ankle replacement (TAR) in the general population according to literature (2005–2013).

Author	Complications	Failures	Revision
Stengel [5]	35.2%	–	–
Zhao [6]	–	11.2%	–
Henricson [7]	–	–	22%
Anghong [8]	–	4.9%	–

- 在非血友病患者中，全踝關節置換存活率還未能追上髖關節和膝關節置換

踝關節置換 vs 踝關節融合

假體受感染 Prosthesis infection

- 急性感染 vs 慢性感染 acute vs chronic
- 退化性關節炎的關節置換: 1-2%

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Summarized Data of the Literature.

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Karthaus et al	1988	11	3,75 (2-8) y	0	0
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Rahme et al	2011	20	66,5 (6-134) m	2 (10%)	1 (5%)
Atilla et al	2011	21	5,7 (2-9) y	1 (4,8%)	2 (9,5%)
Authors	2012	45	88,7 (24-232) m	2 (4,4%)	4 (8,8%)
Total		637		50 (7,8%)	43 (6,7%)



REVIEW ARTICLE *Musculoskeletal*

Perioperative clotting factor replacement and infection in total knee arthroplasty

J. M.-L. WONG,* H. A. MANN† and N. J. GODDARD†

*Specialist Registrar Trauma and Orthopaedics; and †Consultant Orthopaedic Surgeon, The Royal Free Hospital, Pond Street, London, UK

- 455患者，566 全膝關節置換
- 感染率: 7.9%
- 在術後2週，保持凝血因子於高水平
- 感染率: 2.15%

Table 3. Published infection rates in case series with clotting factor replacement regimes equivalent to the WFH guidelines and case series utilizing a 'High level replacement' protocol.

	Clotting factor replacement regime (%)					Deep infection
	TKR	At surgery	72 h	1st week	2nd week	
High level replacement						
Fehily <i>et al.</i> [18]	9	100	100	80 day 6–14	80	0
Sheth <i>et al.</i> [20]	14	100	100	100	100 day 7–10	1 (7%)
Goddard <i>et al.</i> [6]	70	100	100	100	100	1 (1.4%)
Total	93					2 (2.15%)
WFH guideline Level studies						
WFH Guidelines		120	60–80	50	50	
Karthaus and Novakova [11]	11	100	50	50	50	0
Kjaersgaard-Andersen <i>et al.</i> [13]	13	100	50	50	25	0
Heeg <i>et al.</i> [15]	9	100	50	50	25	0
Thomason <i>et al.</i> [16]	23	100	75	50 day 6–10	25 day 11–15	4 (17.4%)
Bae <i>et al.</i> [21]	25	100	90	50	20	0
Silva and Luck [22]	90	100	60	60	60	14 (16%)
Rodriguez-Merchan [23]	35	100	60	60	60	1 (2.9%)
Total	206					19 (9.22%)

- 凝血因子水平不足
- 關節內出血及關節積血
- 血液內的營養有利細菌滋長，引起感染
- 減慢傷口癒合

- Hirose J Haemophilia 2013
- 日本經驗
- 凝血因子抗體增加感染風險
- Inhibitor: significant risk factor for infection

術前，術中，術後
預防感染

人類免疫缺陷病毒的影響

? 手術減低免疫力

? 術後感染

? 病毒傳染

增加術後感染？

- 贊同
 - Silva M. JBJS Am 2005
- 反對
 - Norian JM JBJS Am 2002
 - Powell DL Haemophilia 2005
- CD4+ T細胞數量 (>200 or <200)
- 抗病毒治療更有效地控制病毒
- 此外，許多血友病患者已不再受人類免疫缺陷病毒感染

丙型肝炎病毒

- 增加併發症機會?
- 贊同
 - Pour AE JBJS Am 2011
- 反對
 - Panotopoulos J J Arthroplasty 2014

關節活動範圍 range of motion

	術前	術後	術前	術後
Panotopoulos J J Arthroplasty 2014	82.9	94.1	16.3	3.4
Atila B Haemophilia 2012	37.6	57.1		
Chiang CC Haemophilia 2008	63.2	79.8	15	5.5

- 術前膝關節屈曲攣縮，有效預測術後剩餘攣縮
- 改善攣縮，步行更省力

血栓塞的預防

thromboembolism prophylaxis

1. 深層靜脈血管栓塞 Deep vein thrombosis
 2. 肺動脈栓塞 Pulmonary embolism
- 非血友病患者下肢關節置換
 - 藥物抗栓預防 pharmacological thromboprophylaxis
 - 器械抗栓預防 mechanical thromboprophylaxis

血栓塞的預防

thromboembolism prophylaxis

- 血友病患者
- 出血 vs 血栓塞
- 具爭議性
- 一般建議不作預防
- 盡早開始活動

凝血因子抗體

Clotting factor inhibitor

- 香港，12/222 (5.4%) (Au WY HKMJ 2011)
- 凝血因子注射對凝血無效
- 較嚴重血友病關節病
- 手術可行性？

凝血因子抗體

Clotting factor inhibitor

- By-passing agent
- Factor Eight Inhibitor Bypass Activity (FEIBA, Baxter)
- Recombinant activated Factor seven (rFVIIa, NovoSeven)



REVIEW ARTICLE

Surgical Experience with rFVIIa (NovoSeven) in congenital haemophilia A and B patients with inhibitors to factors VIII or IX

L. A. VALENTINO,* D. L. COOPER,† and B. GOLDSTEIN†¹

*RUSH Hemophilia and Thrombophilia Center, Rush University Medical Center, Chicago, IL, USA; and †Novo Nordisk Inc., Princeton, NJ, USA

骨科手術
止血成效略低

	No. of Procedures <i>n</i> (%)	rFVIIa effectiveness ^a			
		Effective <i>n</i> (%)	Partially effective <i>n</i> (%)	Ineffective <i>n</i> (%)	Not determined <i>n</i> (%)
Clinical trials[†]					
<i>Study 1 (N = 28)</i>	28 (100)	24 (85.7)	2 (7.1)	2 (7.1)	
Surgical procedures					
Orthopaedic [‡]	10 (35.7)	8 (80.0)	1 (10.0)	1 (10.0)	
Catheter placement/removal	1 (3.6)	1 (100.0)			
Other [§]	1 (3.6)	1 (100.0)			
<i>Study 2 (N = 23)</i>	23 (100)	17 (73.9)	N/A	6 (26.1)	
Surgical procedures					
Orthopaedic [‡]	16 (69.6)	11 (68.8)	N/A	5 (31.3)	
Catheter placement/removal	1 (4.3)	1 (100.0)			
Pseudotumour removal	1 (4.3)			1 (100.0)	
Inguinal hernia repair	2 (8.7)	2 (100.0)	N/A		
Eye surgery	1 (4.3)	1 (100.0)	N/A		
Other [§]	2 (8.7)	2 (100.0)	N/A		
Registries					
<i>HRS (N = 11)</i>	23 (100)	19 (82.6)	3 (13.0)		1 (0.04)
Surgical procedures					
Orthopaedic [‡]	5 (21.7)	2 (40.0)	2 (40.0)		1 (20.0)
Catheter placement/removal	3 (13.0)	3 (100.0)			
Circumcision	2 (8.7)	1 (50.0)	1 (50.0)		
Other [§]	1 (4.3)	1 (100.0)			
Dental procedures	12 (52.2)	12 (100.0)			
<i>HTRS (N = 66)</i>	143 (100)	130 (90.9)	13 (9.1)		
Surgical procedures					
Surgical (non-dental), not specified	44 (30.8)	39 (88.6)	5 (11.4)		
Dental procedures	54 (37.8)	51 (94.4)**	3 (5.6)		
Other medical procedures [¶]	45 (31.5)	40 (88.9)**	5 (11.1)		
Published literature					
<i>Publications (N = 135)</i>	178 (100)	147 (82.6)	10 (5.6)	14 (7.9)	7 (3.9)
Surgical procedures					
Orthopaedic [‡]	69 (38.8)	51 (73.9)	6 (8.7)	7 (10.1)	5 (7.2)
Catheter placement/removal	52 (29.2)	50 (94.2)		2 (5.7)	
Circumcision	2 (1.1)	2 (100.0)			
Plastic surgery, grafts, debridement	4 (2.5)	4 (100.0)			
Pseudotumour removal	2 (1.1)	2 (100.0)			
Inguinal hernia repairs	2 (1.1)			2 (100.0)	
Cholecystectomy	4 (2.5)	4 (100.0)			
Fasciotomy	2 (1.1)	1 (50.0)			1 (50.0)
Eye surgery	7 (3.9)	7 (100.0)			
Other [§]	10 (5.6)	8 (80.0)	1 (8.3)		1 (8.3)
Dental procedures	23 (12.9)	18 (78.3)	3 (13.0)	2 (8.7)	



ORIGINAL ARTICLE *Inhibitors*

Elective orthopaedic surgery for haemophilia patients with inhibitors: single centre experience of 40 procedures and review of the literature

H. CAVIGLIA, M. CANDELA, G. GALATRO, D. NEME, N. MORETTI and R. P. BIANCO
Haemophilia Foundation, Buenos Aires, Argentina

- 15 病例
 - 6 沒有過多出血
 - 4 顯著減少
 - 5 沒有改變

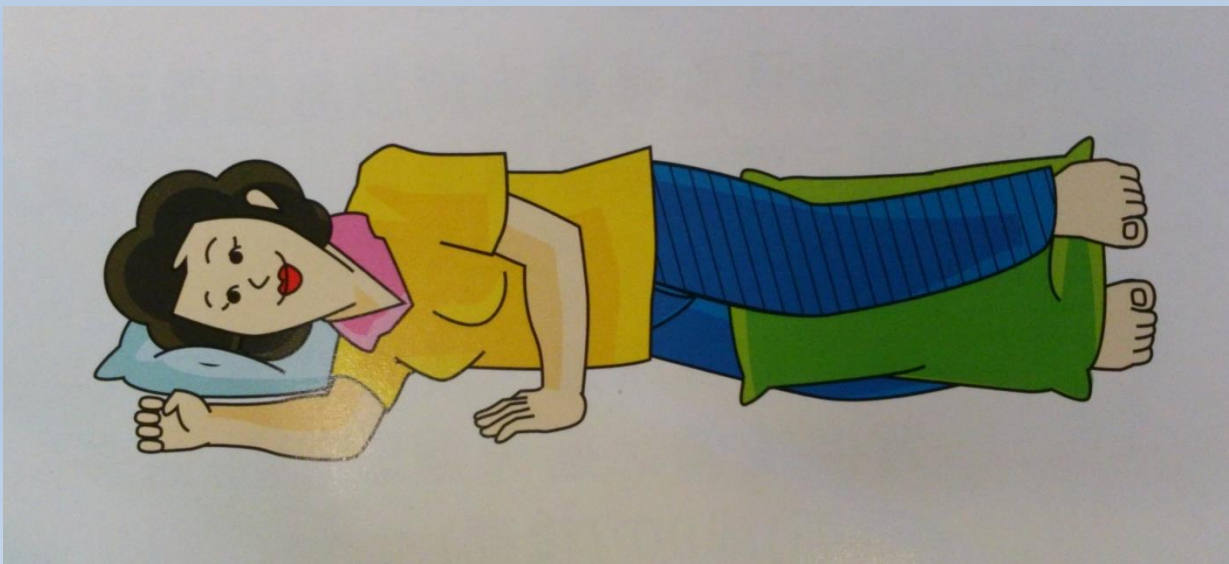
Major procedures

- B1: Right knee arthroscopic synovectomy
- L1: Complicated pseudotumour with bone fractures
- M1: pseudotumour from right thigh
- N1: Femoral osteotomy secondary to haemophilic arthroplasty
- O1: Surgical pseudotumour from right knee removal
- P1: Femoral osteotomy
- P2: Femoral osteotomy
- Q1: Arthroscopy to remove foreign body
- Q2: Arthroscopy followed by arthrotomy
- Q3: Right knee articular drainage
- G2: Right femoral surgical pseudotumour removal
- G4: Right calcaneous surgical pseudotumour removal
- G5: Right calcaneous surgical pseudotumour removal
- R1: Left femoral fracture osteosynthesis
- R2: Right femoral fracture osteosynthesis

術後注意事項

post-operative precautions







器拾物。



醫生，我係咪要換髖喇？

- 關節置換: 非緊急手術
- 目的: 緩解疼痛，改善日常生活
- 適合晚期血友病關節病患者，非手術方法已不能紓緩病徵

醫生，我係咪要換髖喇？

- 個人化
- 認識血友病關節病
- 認識關節置換
- 現實的目標和預期
- 患者，家人，血液科醫生，骨科醫生共同決定



香港血友病會第九週年會員大會

日期：2015年4月12日(星期日)
 時間：下午2時至6時
 地點：醫院管理局大樓閣樓研討室

時間	內容
14:00 - 15:00	第九週年會員大會
15:00 - 15:15	世界血友病聯盟世界會議墨爾本2014會後分享
15:15 - 16:00	茶會
16:00 - 16:45	換股講座：醫生，我係咪要換股喇？ 鍾廣賢醫生 威爾斯親王醫院矯形外科及創傷科副顧問
16:45 - 17:30	論壇：血友病病人關節處理 模擬小組討論—血友病病人關節置換 鍾廣賢醫生 威爾斯親王醫院矯形外科及創傷科副顧問 王紹明醫生 香港中文大學內科及藥物治療學系血液科主任 李偉生醫生 香港中文大學兒科學系榮譽臨床助理教授 陳素嫻女士 威爾斯親王醫院資深護師(內科) 陳淑敏小姐 威爾斯親王醫院一級物理治療師 劉耀文先生 藥劑師

報名或查詢：致電3998 3624 (區焯堃Kenny) 或 電郵至 office@haemophilia.org.hk