Surgical pearls and best practice

A.Deltour MD

Hôpital Delta CHIREC

Bruxelles

Universités Smith & Nephew Watford 30/10/2019

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Conflit d'intérêt

- Consultance: Smith+Nephew
  Arthrex

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Index de Performance en PTG

- Short hospitalization
- Lenght of the incision

- Beter quality by a beter contrôle of the pain and te inflamation
- Reduced risk of complication and failure
- Beter functional recovery time
- Improve the patient satisfaction index

1. Readmission rate within 30 days: infection- cardiovascular problem
2. Patient satisfaction index: KOOS, FKJ, Womac

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Performance

Not only the surgery!

Global Philosophy

- Préop
- Surgery
- Postop

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Indications

- Bone /Bone
- Enough complaints
- Ligament competence

Knee. 2017 Aug;24(4):856-862. doi: 10.1016/j.knee.2017.04.005. Epub 2017 May 24.

Multifactorial analysis of dissatisfaction after primary total knee replacement.

Dhurve K[1], Scholes C[2], El-Tawil S[3], Shaikh A[4], Weng LK[5], Levin K[6], Fritsch B[7], Parker D[8], Coolican M[9].

RESULTS: A cohort comprised 301 patients (response rate 71%), with 24 patients (eight percent) dissatisfied at a mean follow-up of 37months (range eight to 74months). Persistent pain was the most common reason for dissatisfaction (n=10). Dissatisfied patients reported a significantly higher mean PCS score (P=0.03), higher depression component of the DASS (P=0.02) and lower internal locus of control (P=0.02). The dissatisfied group exhibited reduced improvement (P<0.05) in the Oxford Knee Score (OKS) and range of motion (ROM), as well as a lower preoperative grade of osteoarthritis compared to satisfied patients.

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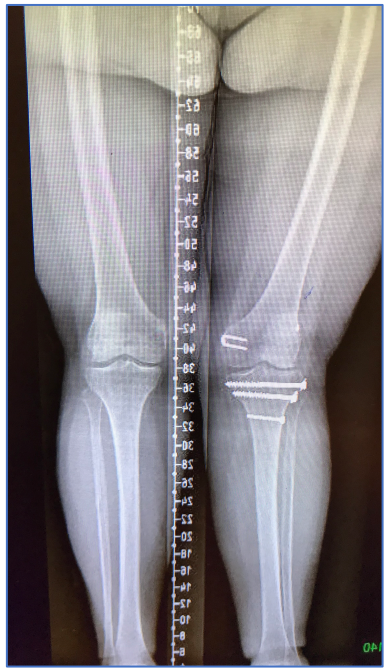

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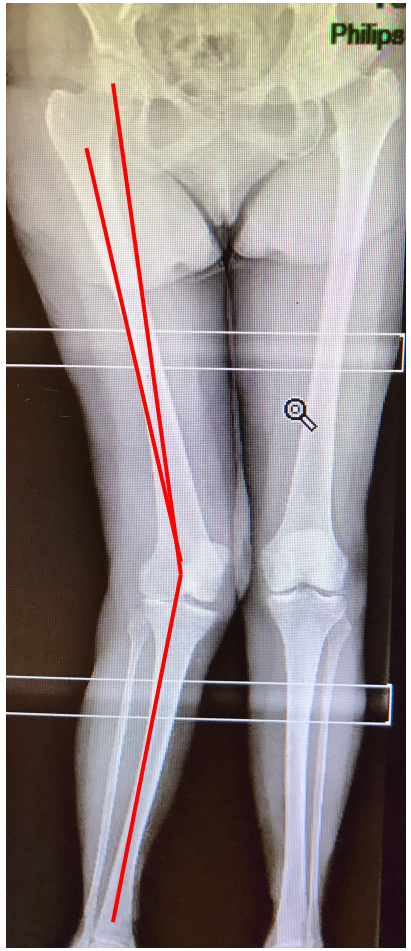
Full exams

- Xr and Full leg xr
- MRI-ArthroCT



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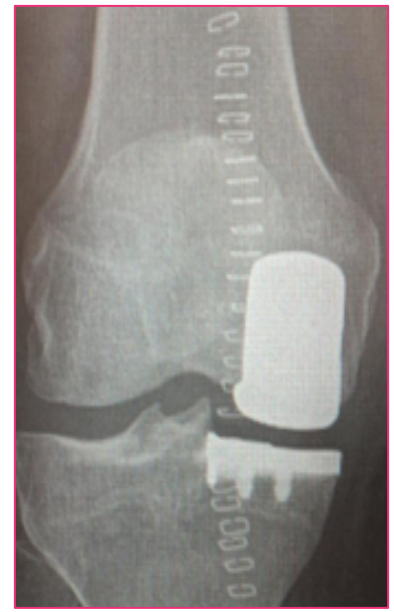




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Information to the patient

- Information session: surgeon –Anesthesiologist-nurse -Physio

Complications:

- Infection
- DVT – emboly
- fracture
- Wound problems
- Hématomes
- stiffness
- CRPS

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Search for Patients at risk of readmission

- HTA– IR - IP
- Anémia (EPO)
- Prise d'immunosuppresseurs oraux (corticoides, Imuran, Cellcept,..)
- Anticoagulants: Xarelto- Clopidogrel
- Old patient
- High BMI élevé (malnutrition)
- ASA > 3

Syst Rev. 2019; 8: 215. PMCID: PMC6706890
Published online 2019 Aug 22. doi: 10.1186/s13643-019-1140-3 PMID: 31439039

Patient-related risk factors for unplanned 30-day readmission following total knee arthroplasty: a protocol for a systematic review and meta-analysis

Daniel Gould,[✉1] Michelle Dowsey,[1,2] Tim Spelman,[1] Imkyeong Jo,[1] Wassif Kabir,[1] Jason Trieu,[1] and Peter Choong[1,2]

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Search for patients at risk of CPRS

PainDetect score >19 !

J Pain. 2018 Nov;19(11):1329-1341. doi: 10.1016/j.jpain.2018.05.011. Epub 2018 Jun 18.

Preoperative Neuropathic Pain-like Symptoms and Central Pain Mechanisms in Knee Osteoarthritis Predicts Poor Outcome 6 Months After Total Knee Replacement Surgery.

Kurien T[1], Arendt-Nielsen L[2], Petersen KK[2], Graven-Nielsen T[3], Scammell BE[4].

Abstract

Preoperative pain characteristics in patients with osteoarthritis may explain persistent pain after total knee replacement. Fifty patients awaiting total knee replacement and 22 asymptomatic controls were recruited to evaluate the degree of neuropathic pain symptoms and pain sensitization. Patients with OA were pain phenotyped into 2 groups based on the PainDETECT questionnaire: high PainDETECT group (scores ≥19) indicating neuropathic pain-like symptoms and low PainDETECT group (scores <19) indicating nociceptive or mixed pain. Cuff algometry assessing pain detection thresholds and pain tolerance thresholds was conducted on the lower legs. Temporal summation of pain was assessed using 10 sequential cuff stimulations and a von Frey stimulator. Conditioning pain modulation was assessed by cuff pain conditioning on 1 leg and parallel assessment of pain detection thresholds on the contralateral leg. Pressure pain thresholds were recorded by pressure handheld algometry local and distant to the knee. Knee pain intensity (visual analogue scale) and pain assessments were collected before and 6 months after total knee replacement. Thirty percent of patients demonstrated neuropathic pain-like symptoms (high PainDETECT group). Facilitated temporal summation of pain and reduced pressure pain thresholds distant to the knee were found in the high PainDETECT group compared with the low PainDETECT group and healthy controls ($P < .001$). Patients with OA with high PainDETECT scores had higher postoperative visual analogue scale pain scores than the low PainDETECT patients ($P < .0001$) and facilitated temporal summation of pain ($P=.022$) compared with healthy control subjects. Perspective: This study has found that preoperative PainDETECT scores independently predict postoperative pain. Patients with knee OA with neuropathic pain-like symptoms identified using the PainDETECT questionnaire are most at risk of developing chronic postoperative pain after TKR surgery.

The choice of the implant

- Good design
- Hypoallergénic
- A sufficiently long tibial stem

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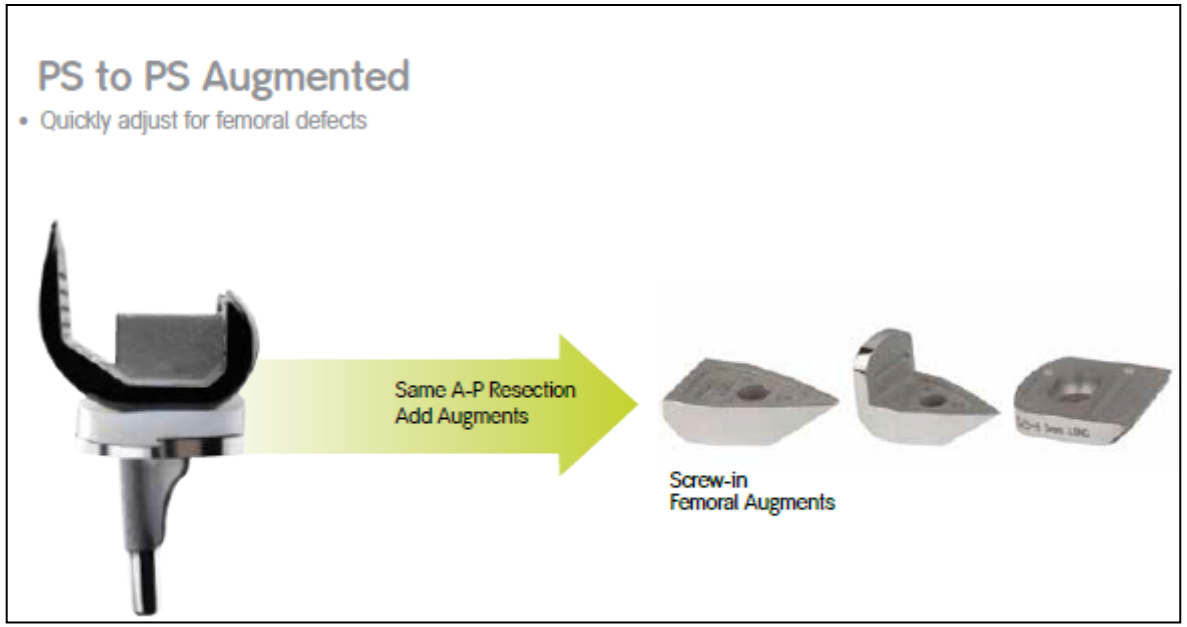
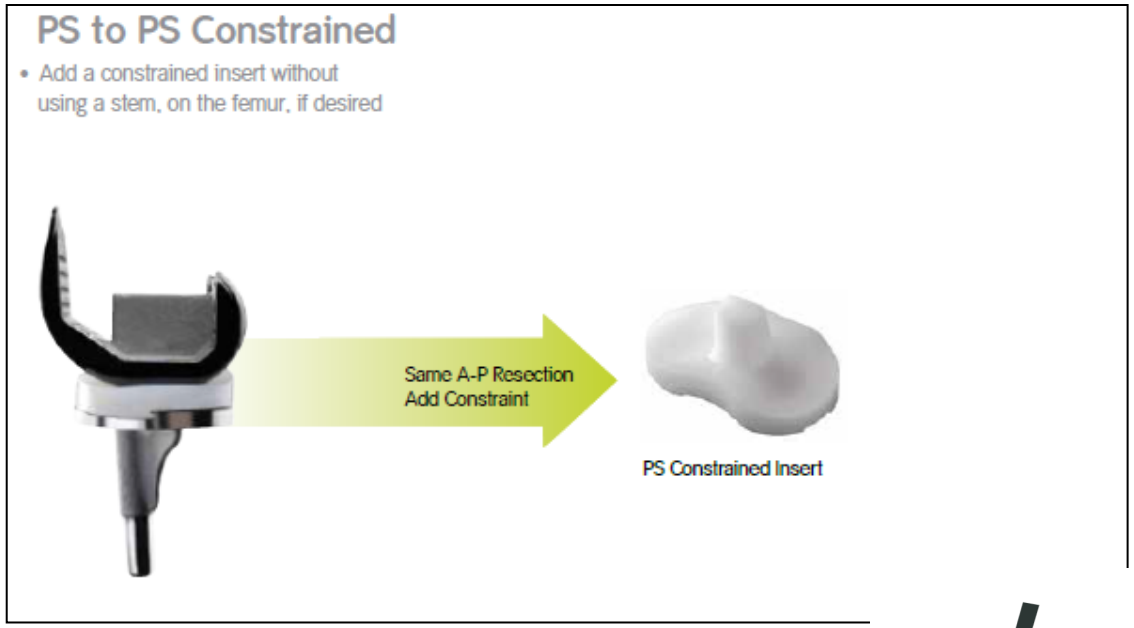
Choice of the implant – instrumentation ad hoc

Provide the necessary back-up

- Bone defect
- Ligament deficiency: CPS





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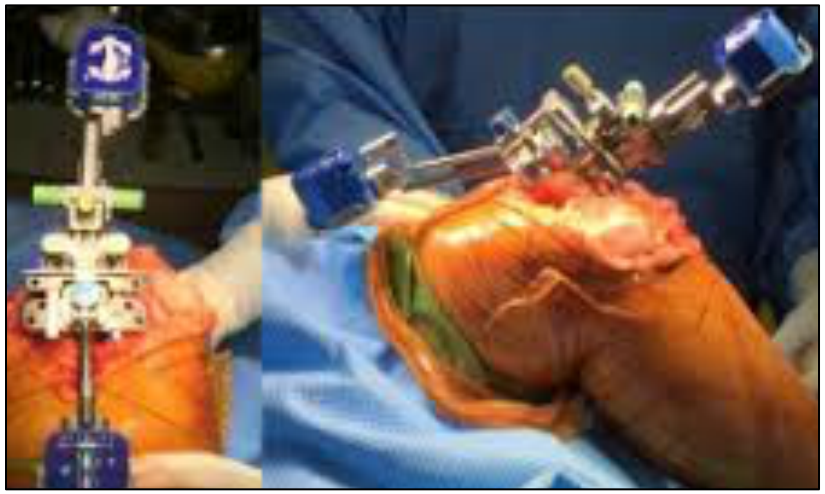
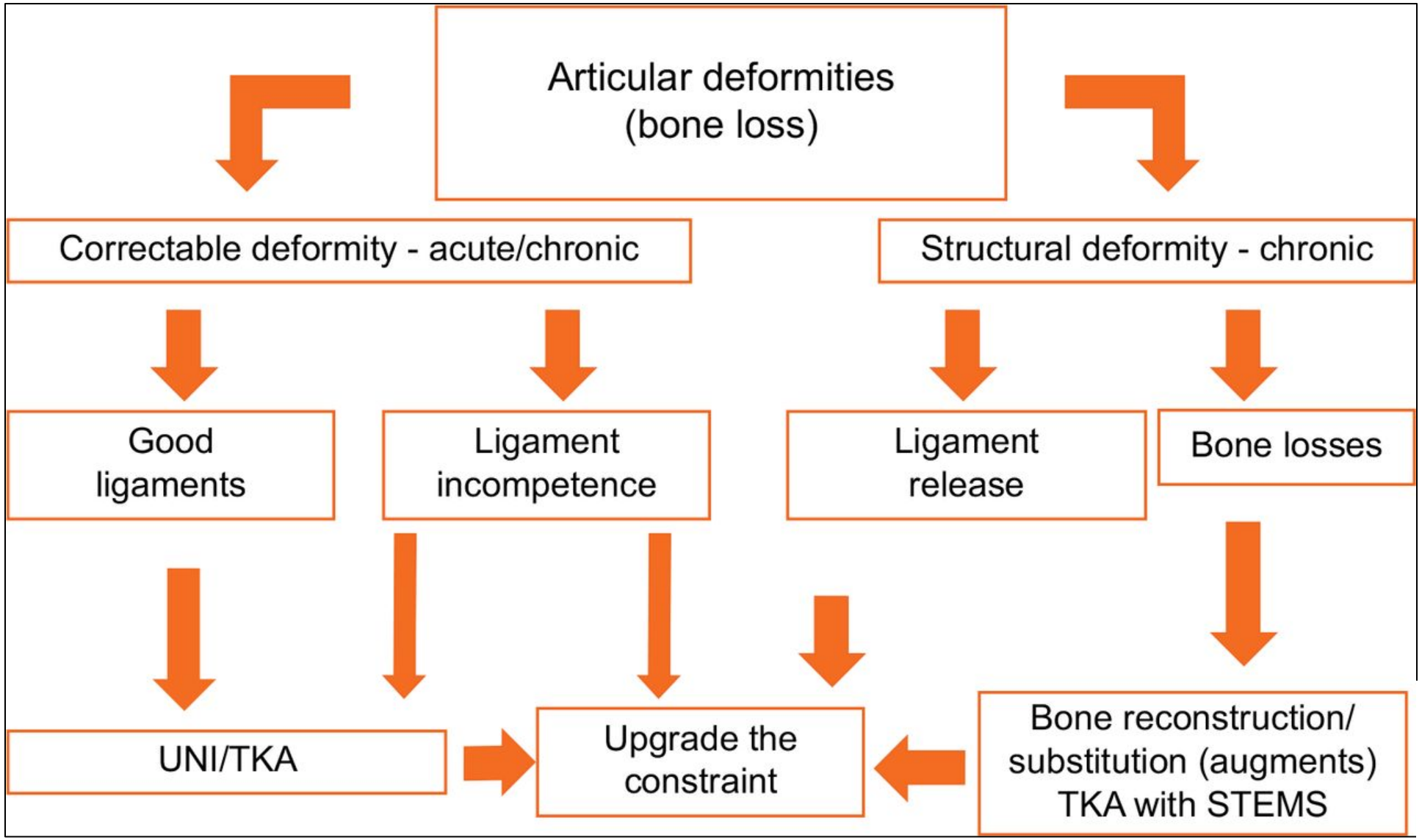
Extra articular deficiency

- Navigation (I-assist)
- PSI (Visionnaire)
- Robotic (Navio)



Decision Algorithm



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Hospitalisation – Surgery – Postop rehab

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Preparation

- Shower with Isobetadine
- Solumedrol 125 mg
- Céfazoline 30 min before the surgery
- Tranexamic Acid (Exacyl)
- Pain killer
- Anxiolytic medication

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Per op

- No tourniquet!

J Orthop Surg (Hong Kong). 2017 Jan;25(1):2309499016684323. doi: 10.1177/2309499016684323.

Is cement penetration in TKR reduced by not using a tourniquet during cementation? A single blinded, randomized trial.

Vertullo CJ[1,2], Nagarajan M[1].

Abstract

Despite suggestions that tourniquet inflation during total knee replacement reduces bleeding and hence improves cement penetration, no studies exist supporting this widely held belief. In this single-blinded, single-surgeon, randomized controlled trial, the tourniquet inflation during cementation group (n = 20) did not have greater tibial cement penetration compared to a no tourniquet group (n = 20). No statistically significant differences in semiautomatic digitally measured average and central radiographic tibial plateau penetration values were observed between the two groups (p = 0.93; p = 0.84). Tourniquet inflation during cementation does not appear to improve tibial cementation penetration.

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Anesthesiology

- Rachis anesthesiology
- Intraarticular Block : Ropivacaïne - Ketorolac- Epinéphrine
- Block of the adductors.

BMC Musculoskelet Disord. 2014 Jul 5;15:220. doi: 10.1186/1471-2474-15-220.

Local anaesthetic infiltration for peri-operative pain control in total hip and knee replacement: systematic review and meta-analyses of short- and long-term effectiveness.

Marques EM[1], Jones HE, Elvers KT, Pyke M, Blom AW, Beswick AD.

CONCLUSIONS: Local anaesthetic infiltration is effective in reducing short-term pain and hospital stay in patients receiving THR and TKR. Studies should assess whether local anaesthetic infiltration can prevent long-term pain. Enhanced pain control with additional analgesia through a catheter should be weighed against a possible infection risk.

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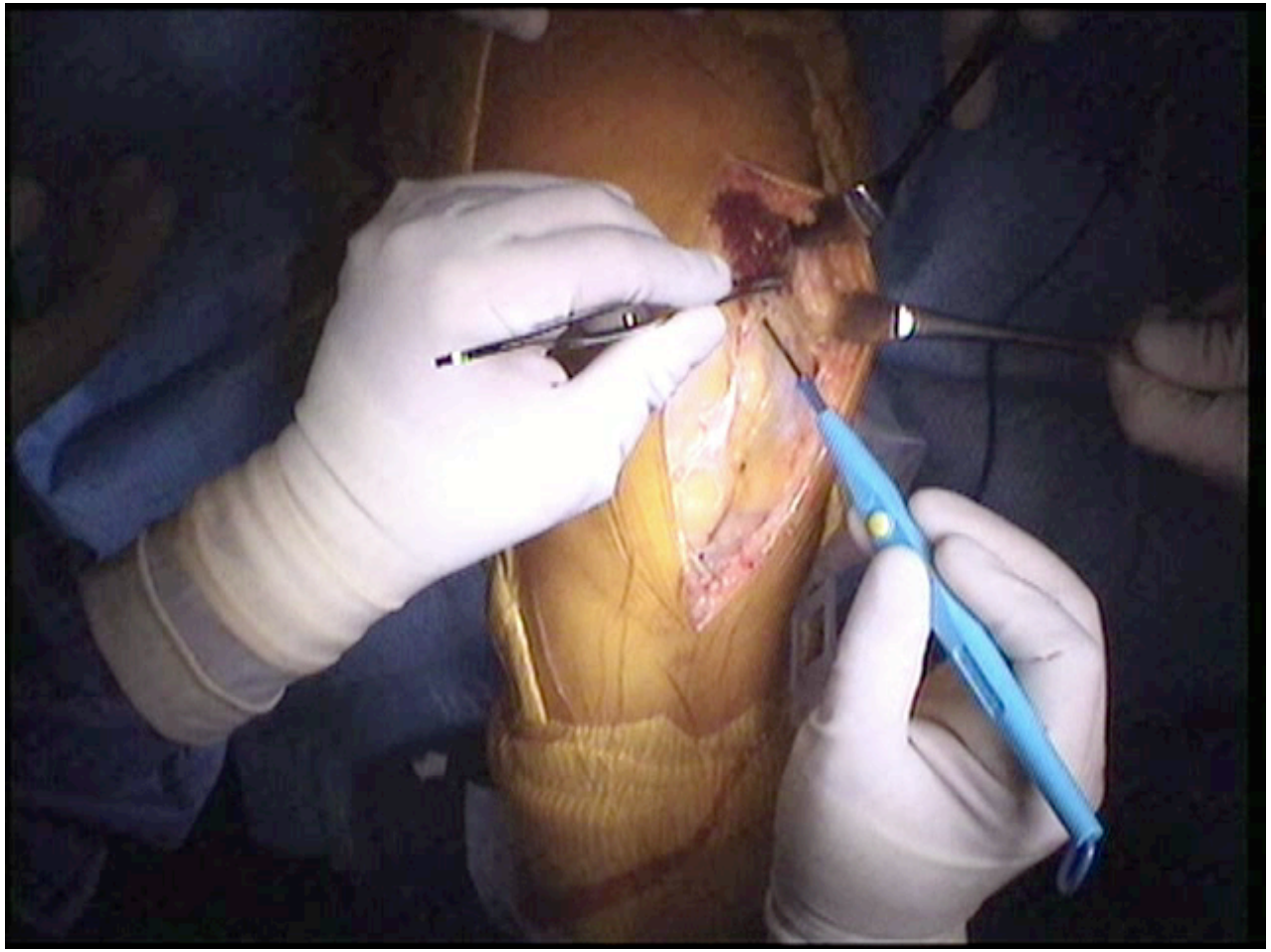
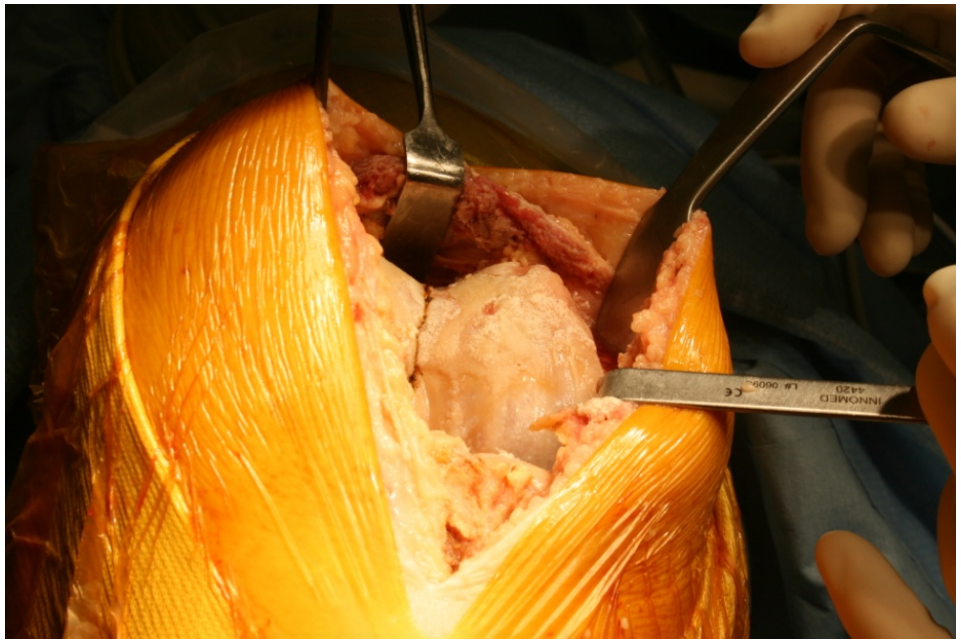
Subvastus approach





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Haemostasis

- **Mechanical haemostasis:**

  Coagulation pendant la dissection (anatomie)

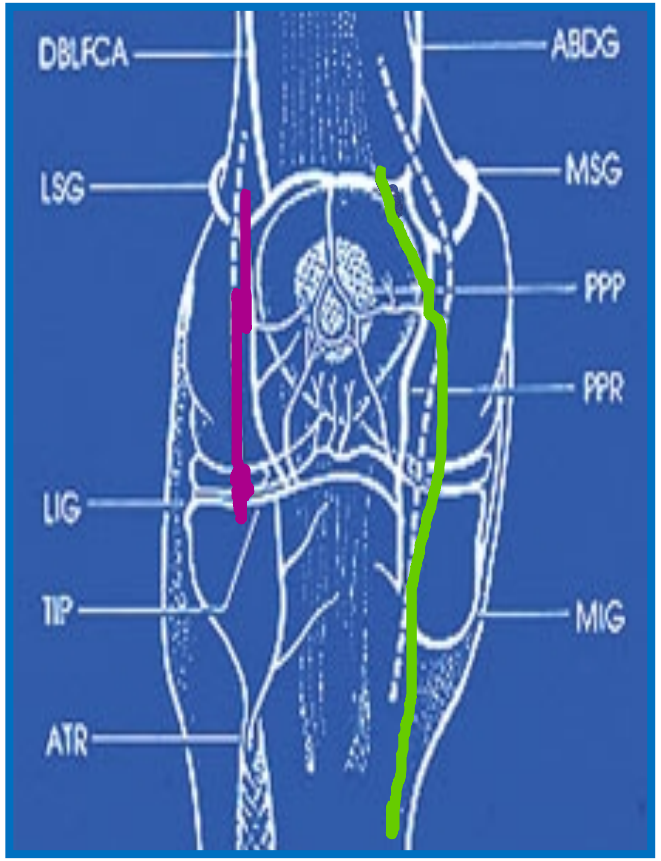
  - inféro-intern Genicular a.
  - Top of the PCL A.
  - inféro-lateral Genicular a.(mén ext)

- **Chimical haemostasis**

  Ropivacaïne+ Epinephrine

- **Systemic haemostasis:**

  Tranexamic Acid 1g before and 5h after the surgery. Than Per os 3x1g



Take care ! latéral release
Induce patella necrosis
Extensor system problem

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Surgery

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Reasons of TKP revision

- Instability
- Infection
- polywear
- Periprosthetic fracture
- Unexplainable Pain and arthrofibrosis : CPRS
- Early aseptic loosening
- Human errors: rotation- mal alignment

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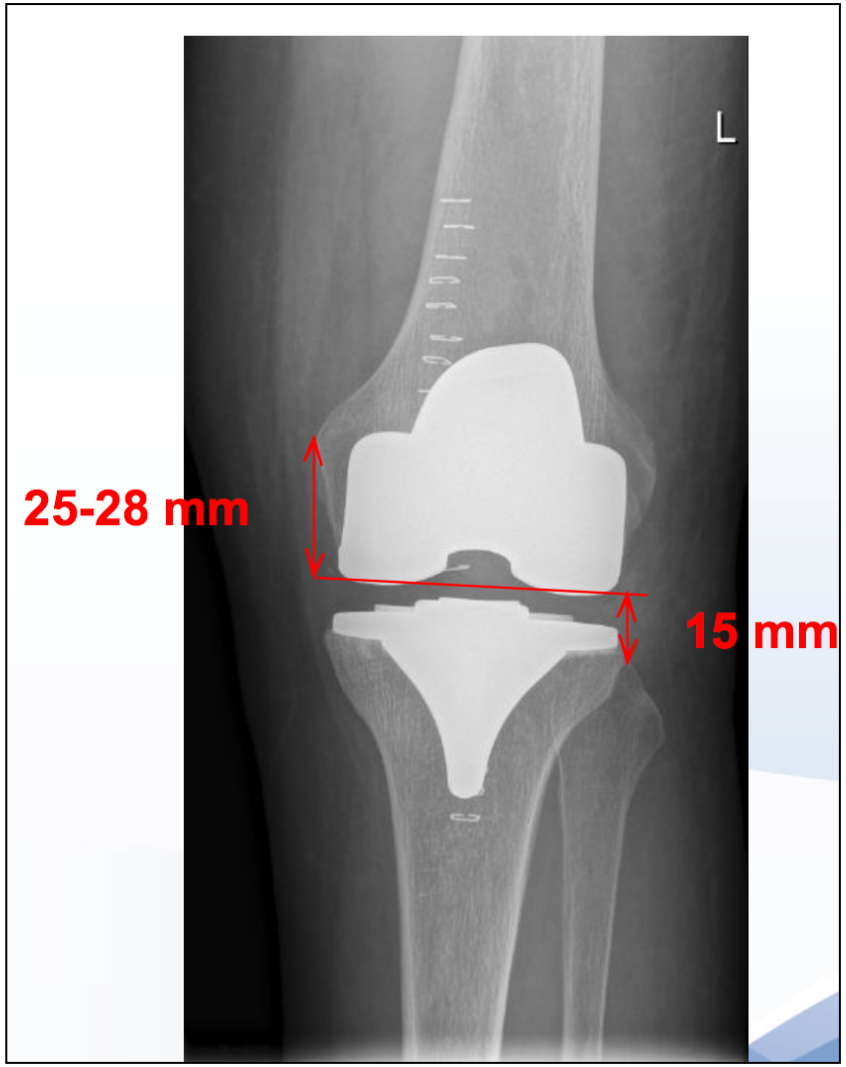
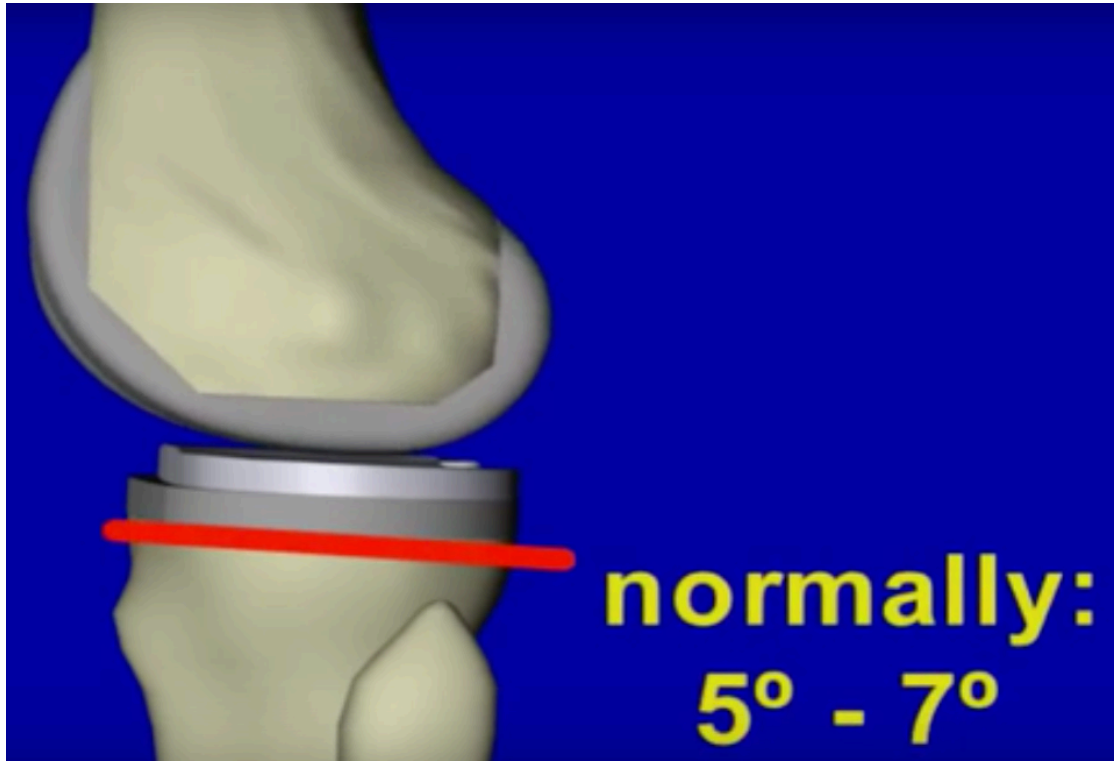
Jointline- Tibial slope



« meniscus rest»



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extension-flexion Gaps

	Tight Extension	OK Extension	Loose Extension
Tight Flexion	1	2	3
OK Flexion	4	5	6
Loose Flexion	7	8	9

1. Resect more tibia/ Use thinner poly insert
2. Downsize the femoral component
3. Lower jointline by augmenting distal femur
4. Resect more distal femur
5. Go Home !
6. Lower jointline by augmenting distal femur
7. Upsize femoral component or move femoral component proximally and use thicker insert
8. Upsize femoral component or move femoral component proximally and use thicker insert
9. Use a thicker tibial insert

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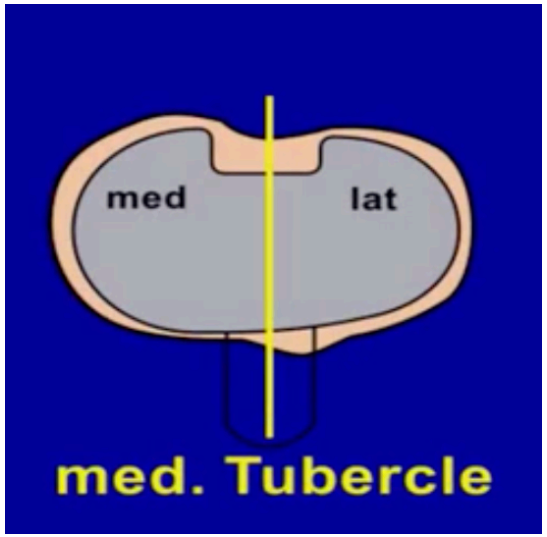
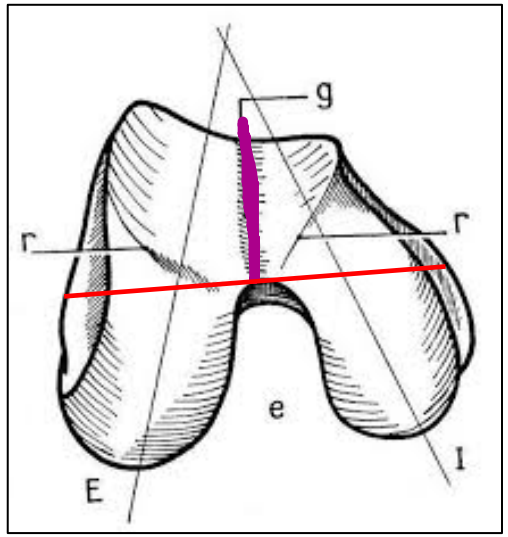
lateral – medial stability

- Rotation: anatomic landmark

E-libra system



Tibial rotation: med TTA



Rotation on the femur: Whiteside line and bi-epicondyle line

Ligaments balance system
And Pressure system

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Ligament balance

- <u>Valgus:</u>
  - ➢ Tight in extension → ITB release
  - ➢ Tight in flexion → Popliteus tendon
    Posterolatéral
- <u>Varus:</u>
  - ➢ Tight in extension → MCL release, osteophyte
    lateralisation of the plateau
  - ➢ Tight in flexion → Anserinus tendon
    release

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Ciment technic: hybrid

J Arthroplasty. 2011 Apr;26(3):492-6. doi: 10.1016/j.arth.2010.01.107. Epub 2010 Apr 8.

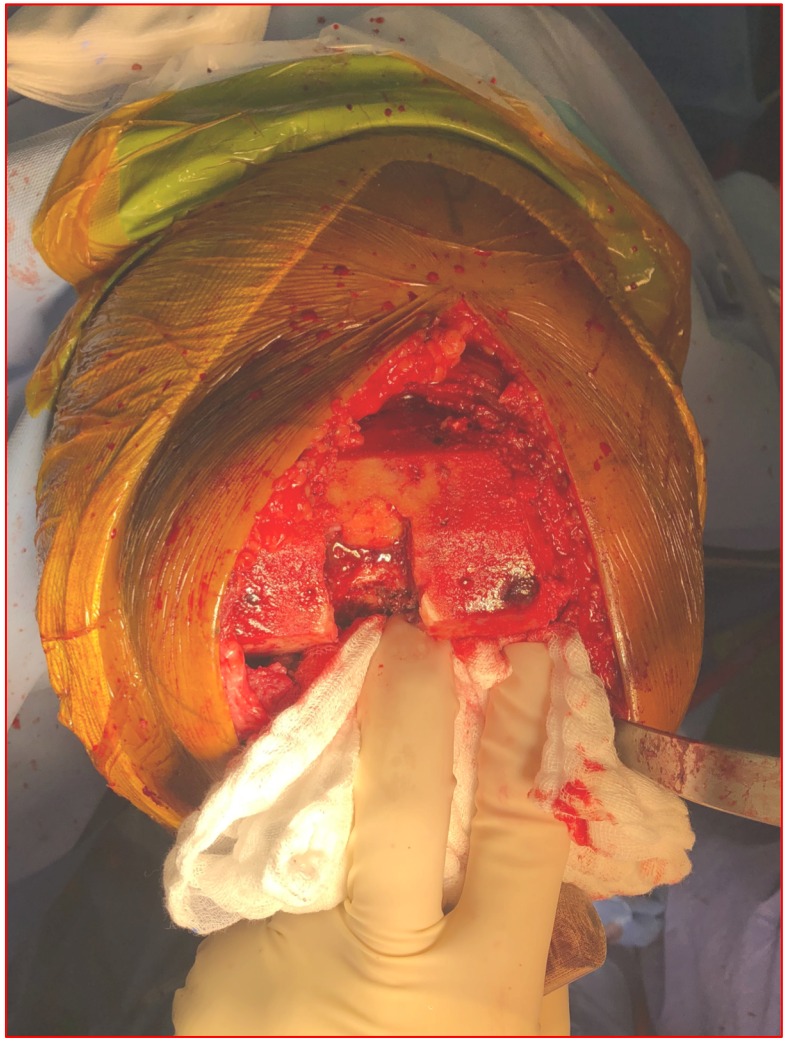
Cementing the tibial component in total knee arthroplasty: which technique is the best?

Vanlommel J[1], Luyckx JP, Labey L, Innocenti B, De Corte R, Bellemans J.

Abstract

Aseptic loosening of the tibial component remains a major cause of failure in total knee arthroplasty and may be related, directly or indirectly, to micromotion. Therefore, good fixation of the tibial component is a prerequisite to achieve long-term success of the implant. Cementing technique is one of the factors that play a role in this respect. We investigated the effect of different cementing techniques on the cement penetration in the proximal tibia. We compared 5 different cementing techniques in an anatomical open pore sawbone model (n = 25), using a contemporary total knee arthroplasty design and standard polymethylmetacrylate cement. We demonstrated that applying cement to both the undersurface of the tibial baseplate and as well as onto the tibial bone, either by a spatula or fingerpacking technique, leads to an optimal cement penetration of 3 to 5 mm. When cement is applied only onto the tibial component, penetration is insufficient. When a cement gun is used, cement penetration is too excessive.

Bone bloc + ciment



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Postoperative pain controle

- Classic pain control:
  - AINS ou Celebrex with Pantomed
  - Paracetamol
  - Dipidolor Tradonal retard
  - Pompe à morphine
  - Gabapentine – Prégabaline
- Tranexamic Acid (Exacyl)
- Cryothérapy
- Daflon

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To Perform: Important to evaluate the quality

Data base : preop and postop
Subjective and Objective

IT support

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Support IT

Data collection by : Lynxcare

MoveUP

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Advantages

- Objective evaluation of our work
- Modify the protocoles to perform beter
- Studies

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Conclusion: To Perform

- Good indication
- Good design
- Good reproducible surgical technic
- Good management protocol
- Continue evaluation of the work

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Merci

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