

Difficult Cases: Skin

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My best friend is a plastic surgeon.....!!!!

"You guys orthopaedics surgeons do not know anything
except bone,

but you know there soft tissues around the bone ! "

Anatomy

Can we avoid skin problems ?

How to treat skin problems ?

Anatomy



Knee cutaneous vascularisation

**M. Salmon: « Artères de la peau »
Marseille, 1936**

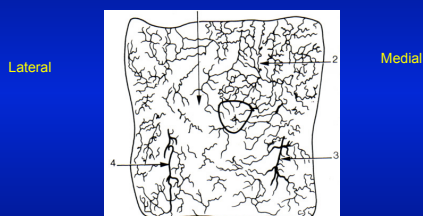
F. de Peretti: R.C.O., 1987

B. Souchère: C. Assoc. Anat., 1989

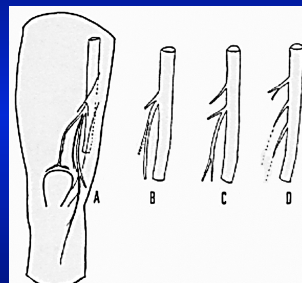
G.G. Hallock: J.B.J.S. Am, 1990

M. Colombel: Surg. Rad. Anat., 1998

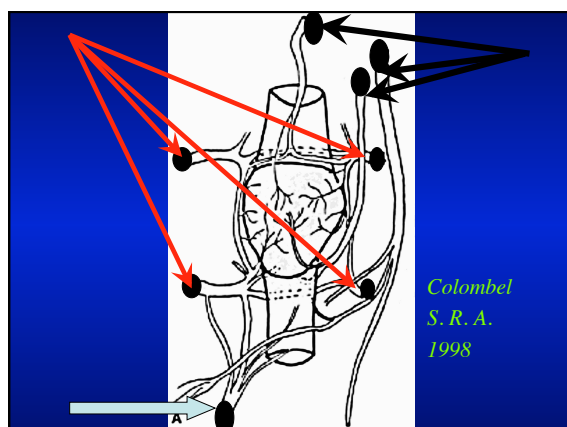
Cutaneous vascularisation (F de Peretti, 1987)



Cutaneous vascularisation is mainly coming from the medial side



M. Colombel, Surg. Rad. Anat., 1998



Can we avoid skins problems ?



How to avoid problems ?

Basic Principles

Identification of the patients at risk

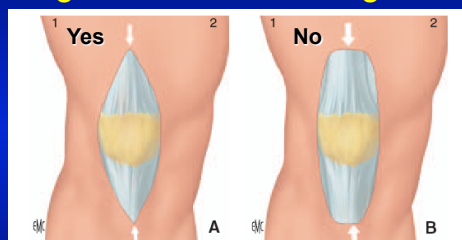
Identification of the situations at risk

Basic 1



Sometimes means
Maximal Invasive
Surgery

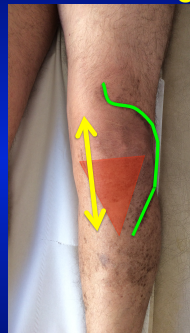
Basic 2: Longer is better than larger....



Prothèses totales du genou
par miniabord

Basic 3: Avoid dangerous Area

NO

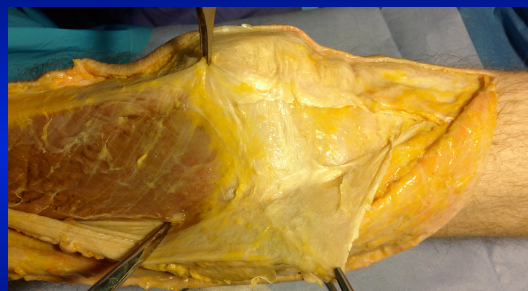


YES

Basic 4 : Always take the more lateral previous incision



Basic 5: direct to the muscle



Identification of the patients at risk

Obesity



Diabetis

Elderly

Cigarettes



Obesity and complications

BMI <30: 0.57%

BMI > 35: 4.66%

BMI > 35 + Diabetis = 10 %



Obesity, Diabetes, and Preoperative Hyperglycemia as Predictors of Periprosthetic Joint Infection

A Single-Center Analysis of 7181 Primary Hip and Knee Replacements for Osteoarthritis

Esa Jämsen, MD, PhD, Pasi Nevalainen, MD, PhD, Antti Eskelinen, MD, PhD, Kaija Huotari, MD, PhD,
Jarkko Kalliovalkama, MD, PhD, and Teemu Moilanen, MD, PhD

Investigation performed at Cima, Hospital for Joint Replacement, Tampere, Finland

Obesity

Longer incision



If the supra-patellar Ratio
 < 1.6 = tuff case

Parratte S: Obesity in Orthopaedic and Trauma Surgery, OTSR, 2014

Stop smoking before surgery

Smoker : risk 4 times higher for the skin

Stop smoking 4 weeks before surgery

Same risk than the non-smoker



Effect of smoking on early complications
 after elective orthopaedic surgery
 Ann M. Møller, Torm Pedersen, Niels Vilhelmsen, Anne Munksgaard
 From Bispebjerg Hospital, Copenhagen, Denmark

Møller AM, Vilhelmsen N, Pedersen T, Tønnesen H. Effect of preoperative smoking intervention on postoperative complications: a randomised clinical trial. *Lancet* 2002;359:114-7.

Identification of the situations at risk

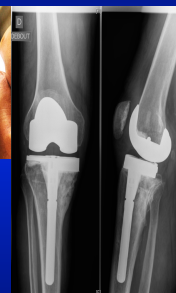
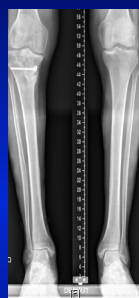
Post-traumatic

Post-osteotomy

Multiple incisions

Corrections of large deformities

Post-traumatic



30% of
 complications

Total knee replacement following intra-articular malunion.
Parratte S, et al. OTSR, 2011 ;97(6 Suppl):S118-23.

Systematic Management for post-traumatic patients

Information

Stop smoking or NO Surgery

Internist to manage Diabetis

2 systematic pre-operative visits

Plastic Surgeon

Clinical micro-biologist

Plastic Surgeon in the room

When hardware still in place

2 stages

Removal + Gastroc flap during the first
 stage

TKA 6 months after

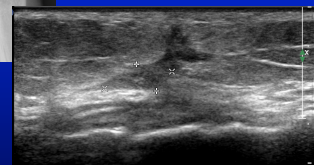
TKA Post HTO

Medial incision : go medial

Lateral :incision : go lateral



If you go to medial:
Nevroma of the infra-patellar Branch



What can we do when it's too late?

Balloons?

Muscular flaps?

Fascio-cutaneous flaps?

Balloon?

Historical report

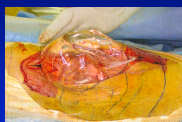


Roy SANDERS, Trevor O'NEILL, J.B.J.S. Br, 1981, 63-B



Soft-tissue expansion prior to arthroplasty in the multiply-operated knee

D.A. Gold et al. , J. Arthroplasty, 1996



- 10 cases
- Expansion time : 64 days
- Volume: 313 ml
- No complication

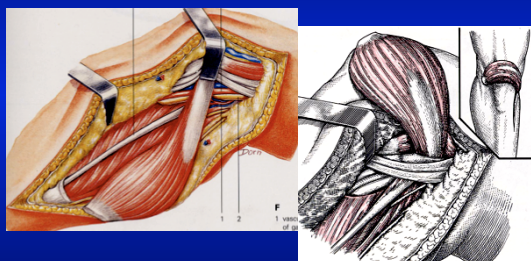
Soft-tissue expansion prior to arthroplasty in the multiply-operated knee

D.A. Gold et al. [Scott SC](#), [Scott WN](#), J. Arthroplasty, 1996

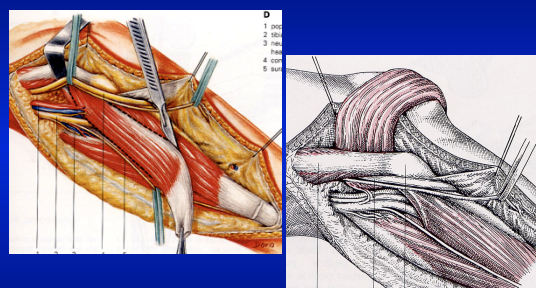
	Knee	Prior Incisions	Knee	Prior Incisions
1	1		6 *	
2	2		7	
3	3		8	
4	4		9	
5 *	5		10	

High infection rate

Medial gastrocnemius flap



Lateral Gastrocnemius



Laing Classification

- Grade 0 : Red, not open
- Grade 1 : Cutaneous necrosis and superficial desunion
- Grade 2 : Superficial necrosis and articular fistula
- Grade 3 : Deep necrosis but no exposition of the implant
- Grade 4 : Deep necrosis and implant exposed

After TKA

Cutaneous necrosis, no infection

Exposure - communication

Exposure - contamination

Exposure – infection

BE OBJECTIVE: Ask somebody else

Choose the best to cover

Medial gastrocnemius

(Patella, para-patellar medial, patellar ligament

Lateral Gastrocnemius

(para-patellar lateral)

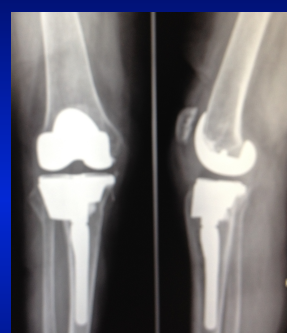
Fascio-cutaneous flap

Delay

- Before 48 hours (very rare)
 - Flap and keep the implant
- Between 48 Hours and 8 days
 - Large excision
 - Muscular flap
 - Maintain the implant
- After 8 days
 - Most of the time: 2 stages
 - Remove the implant, spacer, flap and reimplant later

Clinical case: Me Mir...

63 years-old
2 cardiac valves





Conclusion

- NO DENY
- Do not wait
- Infection in mind
- Don't go for complex cases alone
- Ask your friend plastic surgeon