KNEE FUSION: INDICATIONS AND OPTIONS

JANET D. CONWAY, MD
HEAD OF BONE AND JOINT INFECTION
RUBIN INSTITUTE FOR ADVANCED ORTHOPAEDICS
BALTIMORE, MARYLAND, USA

Disclosures

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• I WILL NOT be discussing “off-label” uses for products or devices.

FAILED 2 STAGE TKA LIT REVIEW:

• ARTHRODESIS—optimal treatment to control infection and gain function compared to
  – 2 stage exchange
  – ABX suppression
  – Amputation

  Wu et al, CORR 2014
AKA FOR FAILED TKA

- 30% ambulate
- 52% wheelchair bound

Pring et al, 1988

4 critical factors for decision making:

- REIMPLANTABLE
- MASSIVE BONE LOSS
- SOFT TISSUE LOSS
- RESIDUAL LLD
REIMPLANTABLE

• SOFT TISSUE LOSS WITH INFECTION AND EXTENSOR MECHANISM DISTRUCTION

NO

• NO SOFT TISSUE LOSS OR EXT MECH LOSS

MAYBE

REIMPLANTABLE

• EXTENSOR MECH
• GOOD BONE STOCK
• GOOD PULSE AND ST ENVELOPE
THE “TEMPORARY” KNEE ARTHRODESIS

Patients/Methods

- 27 patients with refractory infected TKA
- 11 males and 16 females 2010-2015
- Mean Age = 62 years (37 - 77 yrs)
- Mean BMI = 41.5 (29 - 56)

55 yr old female
Open draining wound with knee dislocation
BMI: 56.4
1.7 yr follow up
Walks with walker
Severe right knee OA
BMI still 56.4
No infection

NOT OPTIMAL
RESULTS

• 23/27 85% INFECTION ERADICATION RATE
• ALL PTS WERE AMBULATORY POST-OP

RESULTS

– 4 PTS W RECURRENT INFECTION
  • 1 AKA
  • 1 WITH CHRONIC SUPPRESSION
  • 1 PERMANENT FUSION
  • 1 REVISION TKF
TEMP KNEE ARTHRODESIS

- 85% INFECTION FREE
- IMMEDIATE WEIGHTBEARING
- NO LIMB LENGTH DISCREPANCY
- VERY STABLE “TEMPORARY” CONSTRUCT

MASSIVE BONE LOSS OPTIONS

- SHORTENING
- TRANSPORT

63 yrs-old-F
Rt. total knee replacement (2005)
Infected – Multiple I & D’s,
Revised (Jan 2006)
Presented to RIAO (Apr 2006)
with infection (Gm – 1ve rods, Apr 2006)
Problem List

- Poor ST envelope
- 5cm bone loss
- Infection
IM rod Infection
Treated with antibiotic coated IM rod change and IV antibiotics

Feb 2007

May 2007

Tibial osteotomy and bone transport
43 YR OLD FEMALE WITH INFECTED KNEE
PREVIOUS GASTROC FLAP
NO EXTENSOR MECH
7 cm bone loss and short 5cm
44 yr old female s/p multiple TKA revisions

• Now s/p quadricepsplasty, TKA revision, proximal tibial fracture, and arterial injury w/ arterial bypass
Initial X-RAYS

PROBLEM LIST

• Large anterior wound w/ exposed hardware and loss of extensor mechanism
• Arterial bypass-not a free flap candidate
• Infected TKA

Insertion of Temporary cement spacer and long knee fusion rod
Granulating wound w/ VAC treatment

Removal of spacer/exchange long IM rod and osteotomy for bone transport w/ monolat orthofix

Space managed w/wound VAC and transport

Post op XRAYS
Close up-post op XRAYS

Progressive Clinical Photos after transport and STSG

6/09
SOFT TISSUE LOSS

- FLAP EARLY AND OFTEN
- INCISIONAL WOUND VAC
- IMMOBILIZATION TO DECREASE EDEMA AND PROMOTE HEALING
56 YR OLD MALE SP TKF
RESIDUAL LLD

- LON
- INTRAMEDULLARY LENGTHENING DEVICE

July 2005, 9 cm shortening
CONCLUSION

• TEMPORARY KNEE ARTHRODESIS IS A VERY STABLE AND EFFECTIVE SOLUTION
• LONG FUSION RODS-MAX STABILITY
• BONE LOSS- SHORTENING (<5CM) OR TRANSPORT
• FLAP EARLY AND OFTEN
• FIXING THE RESIDUAL LLD-EASY!
THANK YOU

MULTIPLE FAILED TKR WITH BONE LOSS AND INFECTION
Janet D. Conway, MD
Ahmed Hammouda, MD
Vivian Szymczuk, MD

SCOPE OF THE PROBLEM
• RATE OF INFECTION FOR TKA: 0.3-2.9%
• NUMBER OF TKA—PROJECTED TO INCREASE BY 673% BY 2030
GOLD STANDARD: 2 STAGE EXCHANGE SUCCESS

- Haleem et al 2004, 94 pts: 93.5%
- Mahmud et al 2011: 239 pts: 85%
- Stammers et al 2015: 51 pts: 69%

GOLD STANDARD: 2 STAGE EXCHANGE FAILURE

- Mortazvari et al, 2011: 117pts: 28% reinfection
- Pelt et al, 2014: 58pts: 36% reinfection

PREDICTORS OF FAILURE

- Culture negative
- MRSA
- Need for additional ST procedures
- Lymphadema
- Increased OR time at reimplant
- 4+ surgeries after primary TKA
RESULTS
• 13/24 pts REIMPLANTED
• HINGED PROSTHESIS
• AVG FU: 1.6 yrs
• AVG time to reimplant: 0.5yr (0.4-1.1)
• LATEST FU: 12/13
  92.3% uninfected

REIMPLANTED COMPLICATIONS
• 1 pt with recurrent infection
• 2 pts revision for aseptic loosening
• 5 acute poly change +/- gastroc flap

NOT REIMPLANTED
• 12 pts with TKF
• AVG FU: 1 yr (0.3-3yrs)
• NO INFECTION
• ALL AMBULATORY
NOT REIMPLANTED
• 5 POTENTIAL REIMPLANTS
• 7 PERMANENT TKF

56 yr female revision TKR
LLD of 5cm
AFTER FEMORAL IM LENGTHENING NAIL

16 months post op