PRE-OPERATIVE PREDICTIVE RISK FACTORS FOR SURGICAL FAILURE:
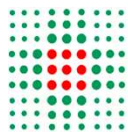
ANALYSIS OF 131 CONSECUTIVE VALGUS PRODUCING HIGH TIBIAL
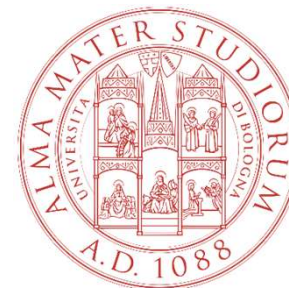
OSTEOTOMY FOR KNEE OSTEOARTHRITIS TREATMENT

G. Dal Fabbro, G. Balboni , S. Di Paolo , G.A. Lucidi,

G.M. Marcheggiani Muccioli , A. Grassi, S. Zaffagnini

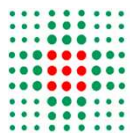- IIa Clinica, IRCCS, Istituto Ortopedico Rizzoli, 40136, Bologna, Italy -

AUTHORS DISCLOSURES

NOTHING TO DISCLOSE

INTRODUCTION & AIM

High tibial osteotomy (HTO) for knee osteoarthritis (OA) treatment showed an increasing trend of popularity in the last years, due to several reason, including good clinical outcomes, knee arthoplasty delays and economical advantages.

In order to improve effectivness, patient personalized approach is required.

A deep insight in predictive demographical and radiological factors related to surgical failure might help in highlighting a surgical algorithm to select the best treatment for the specific patients.

AIM: To evaluate demographical and radiological risk factors predictive of failure and to detect differences among two different techniques of valgus producing HTO.

METHODS

- Retrospective analysis
- Patients who underwent HTO with Closing (CW) or Opening Wedge technique (OW)
- Planned correction: neutralization of the varus defect (target for HKA: 180-182°)
- Inclusion criteria: fully available clinical records, pre-operative full-length x-ray available, follow-up time of at least 2 years.
- Surgical failure: revision related to the initial HTO, such as TKA (total knee arthoplasty) or HTO revision.

- Statistical analysis: Kaplan Meier survivorship analysis and univariate analysis of risk factors related to surg. failure:
  - Demographical (sex, age at surgery, BMI, smoking habits and previous meniscectomy)
  - Radiological (HKA [hip-knee angle], MPTA [medial proximal tibial angle], LDFA [lateral distal femoral angle], JLCA [joint line convergency angle] and KL [Kellgren-Lawrence index]
- Subgroup analysis of the risk factors dividing overall population by surgical techniques (CW vs OW)

✓ 131 patients who fulfilled inclusion criteria were successfully contacted and included (follow up rate 81.9%, mean age at surgery 43.0 years)

OVERALL POPULATION

✓ Mean FU 9.5 ± 4,2y

✓ 17/131 Surgical failures (12.9%)

✓ Survivorship: 87.7% at 10 years, 78.5 at 15 years

✓ Risk factors related to surgical failure (p<0.05):

- BMI OR 1.1 (1.0-1.3)
- Prev. Meniscectomy OR 4.4 (1.5-12.8)
- Higher MPTA
- Higher LDFA
- KL index OR 2.3 (1.1-4.7)

Survival probability - Surgical Failure
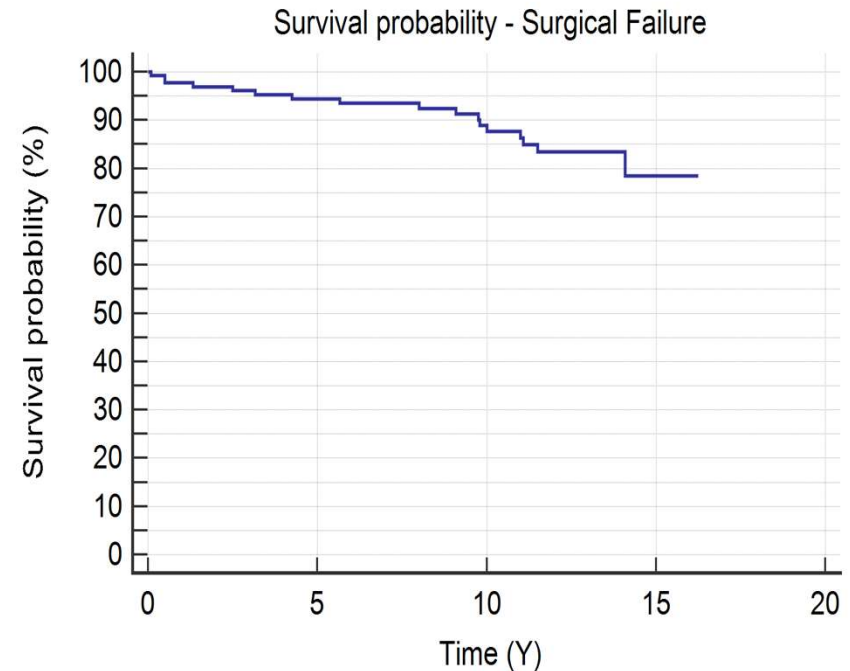
RESULTS

OPENING WEDGE

- ✓ Mean FU 6.2±3.8y
- ✓ 8/48 Surgical failures (17%)
- ✓ Survivorship at 10y FU: 77%
- ✓ Risk factors related to surg. Failure (p<0.05):
  - Prev. Meniscectomy OR 7.8 (1.5-40.8)

CLOSING WEDGE

- ✓ Mean FU 11.4±3.2y
- ✓ 9/83 Surgical failures (11%)
- ✓ Survivorship at 10y FU: 90%
- ✓ Risk factors related to surg. Failure (p<0.05):
  - Smoking habits OR 6.7 (1.5-29.6)
  - LDFA OR 0.7 (0.5-0.9)
  - KL index OR 2.9 (1.0-8.1)

Kaplan Meier analysis showed statistical difference between the two techniques (p= .012), with a higher survivorship in CWHTO population

CONCLUSION

✓ HTO is a reliable surgical procedure for the treatment of knee OA, with high survivorship at long term FU.

✓ **Overall population determinants for failure**:

  • BMI, previous meniscectomy, KL index, higher MPTA and LDFA

✓ **CW predictive factors for failure**:

  • smoking habits, LDFA and KL

✓ **OW predictive factors for failure**:

  • Previous meniscectomy

✓ The results of the current study should be taken into account while planning HTO to provide patients with a more personalized treatment.

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