No significant difference in skin contamination during anterior cruciate ligament reconstruction (ACLR) with and without preoperative skin cleaning

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Disclosure

No conflicts of interest

Infection following ACL Reconstruction

- Rare - incidence of less than 1%[1]
- Most common Pathogens: Coagulase-negative Staphylococci[2]
- Risk Factors: Male sex, tobacco use, diabetes, surgery duration[3,4,5]
- Prevention strategies: single-shot intravenous antibiotics, Grafts soaking in vancomycin[6,7]

Study Objective

To determine whether preoperative antiseptic washing with Octenisan®…

…reduces bacterial contamination during ACLR.

…decreases early surgical site infections.

Study Design

- Prospective, single-blinded study
- 119 patients: 60 Intervention (Octenisan®) vs 59 Control (regular hygiene)
- Ethical approval and registered clinical trial (DRKS00023488)

Study Protocol

- Octenisan® wash for 3 days prior to surgery, morning Octenisan® glove swab.
- Control group: normal hygeine routine, no antiseptic pre-washing.
- No post-operative antibiotics.
- Follow-up at 6 weeks, 3 months, and 12 months.

Sample Collection and Analysis

- 710 samples analyzed: irrigation fluid (taken every 15min from drainage bag) and suture material
- Samples incubated for 14 days to detect bacterial contamination
- False-negatives minimized by assessing sequential cultures

Results I

Patient and surgery characteristics

Variables	Control group	Intervention group	*p* Value
Age in years	31.6 ± 9.6	34.2 ± 9.9	0.12
BMI	25.2 ± 3.7	25.5 ± 4.0	0.64
Female/male in % (*n*)	30.5 (18)	33.3 (20)	0.74
Smokers in % (*n*)	40.7 (24)	23.3 (14)	0.04 *
Surgery duration in minutes	61.4 ± 18.8	59.3 ± 22.9	0.54
Meniscus suture in % (*n*)	61 (36)	40 (24)	0.02 *

* Statistically significant.

Results II

Contamination

- Control group: 345 samples, contamination rate **6.4 %** (n = 22)
- Intervention group: 365 samples, contamination rate **6.6 %** (n = 24)
- No statistically significant between-group difference (p = 0.28)

- 110/119 patients followed up one year postoperatively
- No infections occured

Results III

Pathogens

	Total	Control	Intervention	*p* Value
Staphylococus epidermidis	32.1 (18)	29.6 (8)	34.5 (10)	0.72
Staphylococcus caprae	10.7 (6)	-	20.7 (6)	0.02*
Staphylococcus aureus	7.1 (4)	11.1 (3)	3.5 (1)	0.29
Cutibacterium acnes	14.3 (8)	14.8 (4)	13.8 (4)	0.94
Staphylococcus capitis	5.4 (3)	3.7 (1)	6.9 (2)	0.6
Bacillus cereus	3.6 (2)	7.4 (2)	-	0.15
Staphylococcus haemolyticus	3.6 (2)	3.7 (1)	3.5 (1)	0.97
Other	23.2 (13)	29.6 (8)	17.3 (5)	0.35

* Statistically significant.

Discussion

- Comparison to shoulder surgery
  - Arthroscopic rotator cuff repair: antiseptic precleaning has no impact on suture contamination or postoperative surgical site infection rates[8]
- ACLR-grafts
  - Comparable pathogens[9]
- Alternative: Chlorhexidine-based antiseptics
- Limitations:
  - Follow-up period 1 year – too short?
  - Lack of randomisation
  - Sample size – too small?

Conclusion

Pre-operative skin cleaning influences neither the the risk of bacterial contamination, nor the post-operative infection rates in the setting of ACL Reconstruction.

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