Effects of Vancomycin-Soaked Grafts in ACL Reconstruction: A Systematic Review and Meta-Analysis

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My disclosure along with my co-authors is listed in the disclosure index on the Conference website.

We have no conflicts.
Background

• Post-operative septic arthritis is one of the most feared complications following anterior cruciate ligament reconstruction (ACLR)

• Novel technique of vancomycin-soaked grafts by wrapping the graft in a vancomycin-saturated swab (Vertullo CJ, Arthrosc 2012)
Purpose

To compare the rate of post-operative septic arthritis of anterior cruciate ligament reconstruction (ACLR) between the sole use of intravenous (IV) antibiotics and the additional graft soaking with Vancomycin.
Methods

- PubMed, EMBASE, and MEDLINE were searched in May 2018 for English-language, human studies of all levels of evidence.

- All accepted abstracts at the ESSKA meeting 2018, ISAKOS meeting 2017 and AOSSM 2017 were screened.

- Terms "ACL," "Infection," and "Prevention."

- Postoperative septic arthritis was defined by the means of symptoms, rising CRP, WCC and knee aspiration.

- Data regarding the prevalence of infections were extracted and combined in a meta-analysis.
Results

• Screening 781 titles,
• 4 studies (100% case-control, Evidence-Level III) met inclusion/exclusion criteria.
  • 5,075 patients were followed at least 6 weeks after ACLR.
  • All studies retrospectively compared the rate of septic arthritis between the sole use of perioperative IV antibiotics (Cephazolin 2g), and perioperative IV antibiotics (Cefazolin 2g) plus the topical application of vancomycin (5 mg/ml).
  • The meta-analysis showed a risk ratio of 25.29 (6.03-106.12) favoring the additional use of vancomycin-soaking in ACLR.
### Results

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Vancomycin-soaking</th>
<th>IV antibiotics only</th>
<th>Odds Ratio IV, Random, 95% CI I</th>
<th>Odds Ratio IV, Random, 95% CI I</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
<td>Total</td>
</tr>
<tr>
<td>Brandl et al.</td>
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<td>89</td>
<td>0</td>
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<td>Phegan et al.</td>
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<td>0</td>
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<td>Pérez-Prieto et al.</td>
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<tr>
<td>Offerhaus et al.</td>
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<td>853</td>
<td>0</td>
<td>22</td>
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<tr>
<td>Total (95% CI)</td>
<td></td>
<td>2976</td>
<td>Total</td>
<td>2099</td>
</tr>
</tbody>
</table>

Total events: 44

Heterogeneity: Tau² = 0.00; Chi² = 0.79, df = 3 (P = 0.85); I² = 0%

Test for overall effect: Z = 4.44 (P < 0.00001)

**Figure:** Summary of post-operative septic arthritis cases and odds ratios in patients following ACL reconstruction with and without vancomycin-soaked grafts, as well as the common odds ratio of the meta-analysis. IV: intravenous, CI: confidence interval
Summary

• Across available data, the rate of early-onset septic arthritis following ACLR can be reduced dramatically from 2.1% to 0% by the additional soaking of the ACL-graft with vancomycin (5mg/ml).
• As no differences regarding the frequency of graft failure and subjective outcome scores were detectable between both groups, the application of vancomycin on the graft appears not to impair the outcomes of the ACLR.
• Vancomycin-soaking of the graft seems to be a safe and effective method to reduce septic arthritis following ACLR.
Thank you - Vielen Dank

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References


