

## A Quantification Analysis of the Intraoperative Contamination of the Anterior Cruciate Ligament Hamstring Autografts

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### Summary:

The study estimates the risk of infection after ACL reconstruction due to contaminated hamstring autografts. We quantitatively evaluated the rate, type and level of contamination of hamstring autografts during harvesting and preparation. Additionally, we quantitatively evaluated the contamination rate, type and level for autografts accidentally dropped onto an operating room floor.

### Abstract:

#### Background:

The incidence of infection after anterior cruciate ligament (ACL) reconstruction has been reported to be higher with using hamstring autografts as compared to autografts or allografts. Furthermore, a high rate of contamination of hamstring autograft during harvesting and preparation or by accidental dropping the graft on to the floor has been reported.

The clinical importance of a positive tissue culture remains unknown; however, implanting a contaminated autograft could be a risk factor for surgical site infection (SSI). Additionally, the quantification analysis of contaminated hamstring autografts during harvesting and preparation or in accidentally dropped grafts is still unknown.

#### Purpose:

To estimate the risk of infection after ACL reconstruction due to contaminated hamstring autograft by quantitatively evaluate the rate, type and level of contamination of ACL hamstring autograft during harvesting and preparation. To also quantitatively evaluate the contamination rate, type and level for those accidentally dropped onto an operating room floor.

#### Study Design:

Controlled laboratory study

#### Methods:

Eighty hamstring autograft specimens freshly retrieved from a primary isolated reconstruction of the ACL (forty patients) was performed in a prospective, consecutive series of patients. From each graft, two specimens were retrieved (total of 80 specimens). One immediately after harvesting and was dropped (dropped group) onto the operating room (OR) floor. The other one was retrieved after preparation and just before graft implantation (control group). Each specimen was incubated for aerobic and anaerobic growth, and the number of colony forming units (CFU) per gram was measured. The clinical course for any signs of surgical site infection (SSI) was monitored.

#### Results:

The control and dropped groups had contamination rates (positive cultures) of 22.5% (n=9/40) and 35% (n=14/40), respectively, with no significant difference between the groups (P = .217). The most common organism in the control group was Staphylococcus Epidermidis (44.4%) followed by Staphylococcus aureus (33.3%). In the dropped group, the most common organism was also Staphylococcus epidermidis (35.7%) followed by Bacillus species (21.4%). The median (range) of CFU/g of the positive specimens in the dropped and control groups were 60 [8 – 150] and 9 [2 – 30], respectively (P < .0001). No patient had development of a postoperative SSI.

#### Conclusion:

Despite the rate of contamination of hamstring autograft during ACL harvesting and preparation or by accidently dropping can be relatively high (22.5% and 35% respectively), the quantification analysis showed very low bacterial

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counts in all contaminated specimens, which suggest a low risk for infection and explain absence of clinical infection in our series.

### Clinical Relevance:

The contaminated hamstring autograft during ACL surgery carry a low risk for developing a surgical site infection (SSI), therefore, we do not advocate routine culture of grafts before implantation for both auto and allograft or giving a course of postoperative antibiotics for any patient with a positive culture in the absence of clinical signs of infection. Furthermore, saving and reusing contaminated grafts that were accidentally dropped on to the floor after a proper decontamination is highly recommended over discarding them or using an allograft.