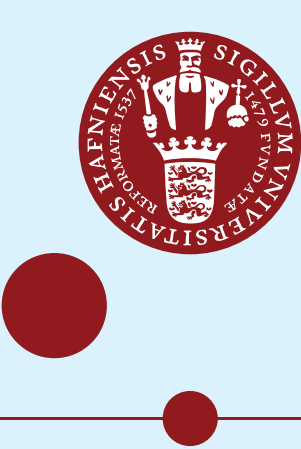




Antimicrobial drape for prevention of postoperative infection: a one-year follow-up study of 1187 patients

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BACKGROUND

Prosthetic joint infection (PJI) is a serious adverse event. It is a feared complication that has a vast impact on the patient's health and socio-economic status, and it imposes a significant burden on the health care system. Antimicrobial drape is used in infection prevention but the effect remains unclear (figure 1). We present a follow-up study of a randomized controlled trial of antimicrobial drape versus bare skin in primary knee arthroplasty patients.

AIMS

1. Does intraoperative contamination increase the risk of infection within the first year of surgery?
2. Does the use of an antimicrobial drape at primary surgery reduce the risk of infection?



Figure 1: Ioban in action, from: 3M™ Surgical Drapes and Gowns Selection Guide 2003-2004

METHODS

In the primary study, 1,659 patients consented and were randomized to surgery with antimicrobial drape (n = 838) or without antimicrobial drape (n = 821) (figure 2). The study was completed at five regional university hospitals in Denmark, located in two different regions, the Capital Region and the Central Denmark Region. Patients were swabbed for bacteria pre-operatively and intraoperatively at primary surgery to examine for intraoperative contamination. Tissue biopsies taken at revision surgery were cultivated on media ensuring optimal growth conditions for gram positive, gram negative and anaerobe pathogens. All biopsies were cultivated for 14 days. Susceptibility testing were done according to EUCAST guidelines. Patients were considered infected if one of five biopsies were positive with a known virulent pathogen e. g., *Staphylococcus aureus* or *Escherichia coli*. Three or more biopsies with a less virulent pathogen like *staphylococcus epidermidis* is required for an infection. In the case of obvious clinical infection (pus, fistula) and the absence of positive culture the patient would also be considered infected.

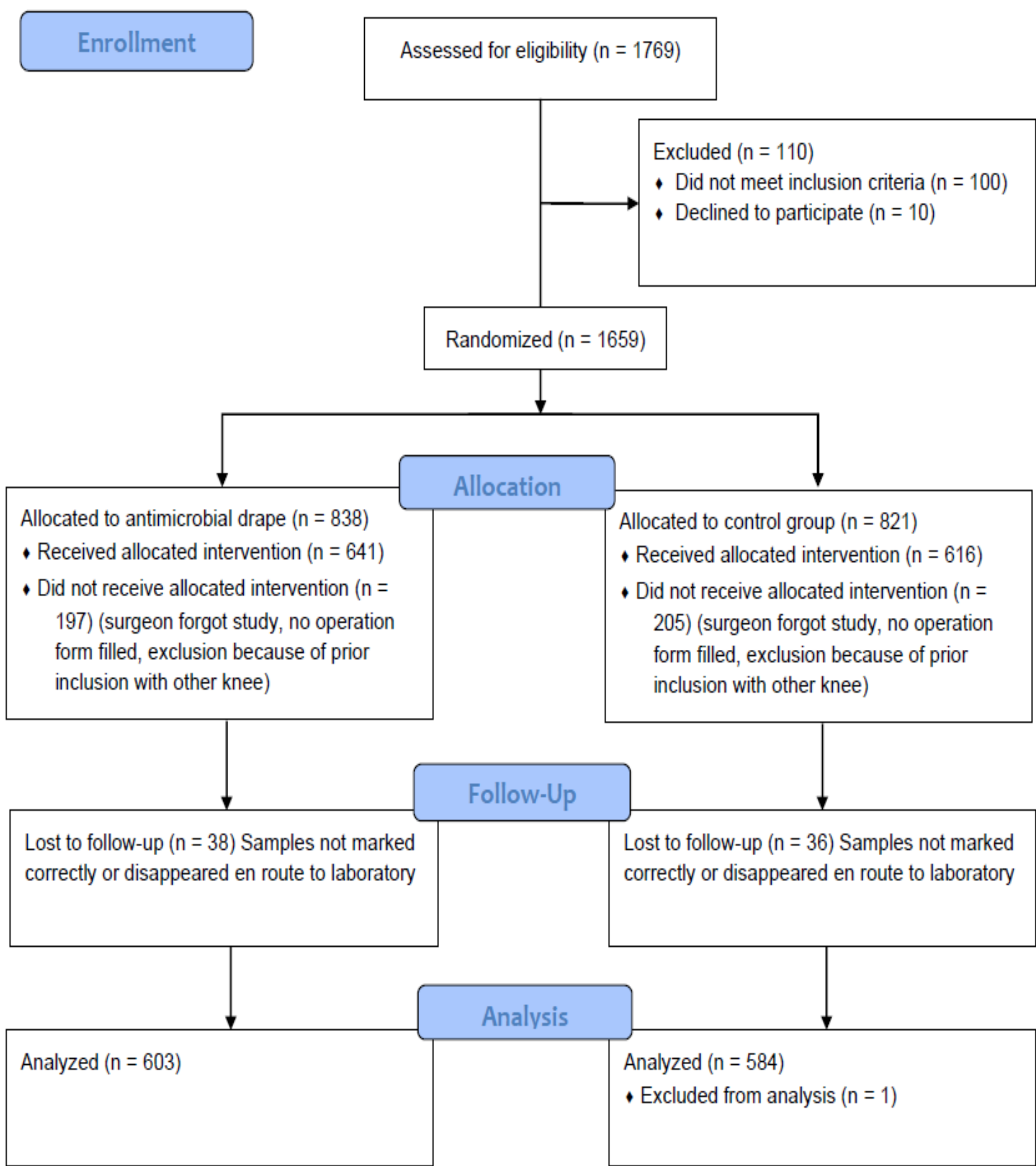


Figure 2. Consort diagram of included, randomized, and analysed patients.

RESULTS

At 1-year follow up 2.6% (31/1187) were re-operated of whom 1.4% (17/1,187) were due to infection.

There was no difference in risk of infection in contaminated patients (2/150) versus the non-contaminated patients (15/1037) OR 0.92, (95 % CI 0.21 to 4.07, p = 1).

There was no difference in risk of infection between patients who had been operated with antimicrobial drape and patients who were operated without antimicrobial drape, OR 1.28 (95% CI 0.56 to 2.93, p = 0.56).

Intention-to-treat analysis was performed for both aims, and the results concurred with the per-protocol analyses.

CONCLUSION

At one-year follow-up, no correlation between contamination and infection or use of drape and diminished risk of infection were found.

With the very low infection rates of prosthetic joint infections the addition of a single intervention will perhaps not make a measurable difference in infection rates. All the precautions we use for infection prevention at present time, are likely to be important. The most important factor is that we keep focusing on general hygiene and prophylaxis so that the low infection rates are maintained.