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Sterilized Mosquito Net versus Commercial Mesh for Hernia Repair

An Experimental Study in Goats in Mbarara/Uganda

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Key Words
Mosquito net · Mesh · Hernia repair · Developing countries

Abstract
Background: In industrialized countries alloplastic meshes are routinely used for hernia repair. However, in developing countries they are rarely available or affordable. This study compares textile properties and tissue response of commercial polypropylene mesh (PM) vs. sterilized nylon mosquito net (MN). ***Methods:*** Textile properties were examined in vitro. In 12 goats one MN and one PM (5.5 × 8 cm) were implanted onto the posterior layer of the rectus sheath. Wound healing was clinically assessed. Histology was assessed after 4 or 16 weeks. ***Results:*** MN was thinner and lighter, but weaker than PM. All wounds healed without complications. After 16 weeks foreign body granulomas in the MN group contained a higher proportion of inflammatory tissue (32.7 vs. 22.1%) and more giant cells (3.1 vs. 1.7/10 granulomas) with a significantly lower partial volume of foreign body (23.2 vs. 36.9%). Partial volume of fibrotic tissue was similar. MN was 1,000-fold cheaper than PM. ***Conclusions:*** PM was superior concerning strength and extent of inflammatory response. However, the findings indicate that MN might serve as a cheap substitute if an alloplastic mesh is needed but no commercial one is available or affordable. Further studies are justified which should include mosquito nets of different materials and long-term outcome.

Introduction

Hernia repair is one of the most frequently performed surgical procedures worldwide. In industrialized countries the use of alloplastic meshes has become a standard procedure over the last decades. Alloplastic meshes considerably reduce the recurrence rate of hernias after short- and long-term follow-up [1, 2]. Additionally their use allows a faster recovery and return to work. Approximately one million meshes per year are implanted worldwide [3].

In most developing countries alloplastic meshes are rarely used. Their use is limited to few private clinics in urban areas. If available at all they are imported and expensive. While there are no reliable numbers about mesh usage in Africa we estimate that less than 5% of inguinal hernias are repaired with alloplastic meshes. Cost recov-

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