

A Mini-Review of Sham Surgery in Orthopedics

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1. Abstract

The purpose of this article is to review the literature related to sham surgery in the field of orthopedics. In a clinical trial, sham surgery acts as a placebo. In some studies, arthroscopic procedures for treatment of knee osteoarthritis show no advantage over sham procedures. The importance, morality, and validity of the experiments have been continuously debated. The medical community is divided on the idea of surgical placebo studies, and just in 2020, numerous publications have come forward in support or opposition to it. Some suggest that the sham studies have flawed design, while others claim it is ill-advised to invalidate the studies based on their limitations. Additional research is necessary to provide insight on whether sham study results can be trusted or if they are erroneous.

2. Introduction

Sham surgery is defined as a surgical procedure, which identically mimics a therapeutic treatment, yet leaves out the healing and curative steps of the operation. It is equivalent to the placebo medications given to a group of patients during drug trials. When the treatment tested shows no superiority to the placebo, the conclusion is that the treatment is no better than placebo [1]. The topic of sham surgery is extremely complex and controversial in the field of Orthopedics. Due to the invasive nature of most surgical procedures, the morality is at question. Arthroscopic surgeries were the keystone of orthopedic placebo research [2-4]. Studies have shown that knee arthroscopies had no superiority over the placebo surgeries [2]. Since then, numerous sham surgery studies have been

performed, which sparked the debate [5-9].

3. Discussion

Knee osteoarthritis surgeries are some of the most common procedures performed in the field of orthopedics. Due to high yearly volume, their efficacy was justifiably tested against the “power of placebo” [2]. Moseley presented a study of 165 patients, suggesting that arthroscopic lavage and debridement treatments lack advantage over sham surgeries [2]. Later, based on this finding, these procedures were terminated from the clinical guidelines in orthopedics. Other research has shown similar effects in both types of surgeries, actual treatment versus sham, when it comes to pain reduction and improvement of disability [10]. Another study was performed based on patients with SLAP II lesions, again proving that labral repair and biceps tenodesis, had no significant clinical benefit over sham surgery [11]. Even though the use of placebo treatment in orthopedics is still yet to be completely understood, surgeons commonly support its use in clinical studies and consider it ethical. Based on a survey conducted at a national conference in the United Kingdom in 2014, 92% of physicians agreed there is scientific basis for sham surgery, 96% thought it involves psychological mechanism, and 58% of the respondents said they’ve used a surgical treatment with a significant placebo component at least once in their professional career [12]. Even though, at large, the orthopedic community is in favor of sham surgeries, some are arguing how much of the progress can actually be attributed to the placebo effect alone. The controlled conditions of the trials provide contrasting mechanisms of the way patients respond to biases,

their natural course of symptoms, and spontaneous variations of improvements and recovery [6].

Sochacki et al. suggests that many of these sham surgery trials are flawed. In their study, seven randomized placebo-controlled trials were analyzed. Most carried fundamental deficiencies, which led to invalid conclusions. Not enough manpower, no genetic susceptibility analysis, no blinding index due to high crossover rates, short term follow-up, exclusion of non-treatment group and per-protocol analysis: those were just some of the downfalls observed [13].

Harris et al. replied to the Sochacki article by stating that the hypothesis of fundamental deficiencies yielding invalid conclusions has not been previously tested. It is their argument that published experimental research is not perfect and that flaws are often noted. The best results are achieved by randomization, in order to reduce performance and detection bias. There are ways to add to the reductions of error: blinding the patients, ensuring longer follow-ups. But even with these factors not being present, it is improper to invalidate high level research [14].

Sochacki et al. then replied that just because the information gathered is best available, it does not compare to the best of our capabilities. The evidence presented should not be relied on entirely for decisions on guidelines and policies. The purpose of the systematic review was to aid future sham surgery trials with designing and conducting studies for optimization of results [15].

4. Conclusion

Sham surgery is an extremely disputed topic in the field of orthopedics. Multiple studies have suggested there is no difference between placebo surgeries and certain surgical interventions. The main question of the debate hinges on whether the sham studies were high quality or if the limitations invalidate them. Additional research is necessary to provide insight on whether sham study results can be trusted or if they are erroneous.

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