Core Muscle Injury Systematic Review

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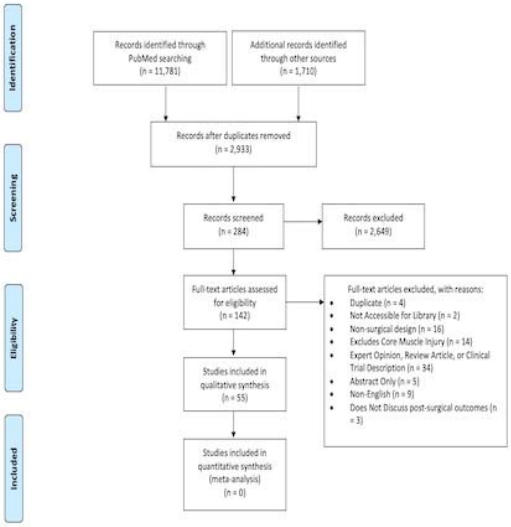
INTRODUCTION:
Lower abdominal injuries and groin injuries are a common cause of pain in athletes and a common reason for lost time from participation in sport (1). The definition of groin pain in athletes has varied for many decades. The injury that we now refer to as core muscle injury or a sports hernia has had many names. These terms originated with British surgeon Jerry Gilmore and "Gilmore's groin". There have been many attempts to define this injury, some descriptions involved the sport that the athlete participated in such as "slap shot gut". The injury has also been referred to as athletic pubalgia, sportman's hernia, sports hernia, and now, more appropriately, core muscle injury. The early years of core muscle treatment were carried out without the ability to use advanced magnetic resonance imaging and most surgeries were performed by general surgeons. Therefore, surgeons treated the groin pain with modifications of hernia repair that would normally be carried out to treat an inguinal hernia. Magnetic resonance imaging now plays a major role in the diagnosis of core muscle injury, thus demonstrating a tendinous injury where the rectus abdominus and adductor longus meet at the pubis rather than a hernia. The lack of consistent terminology leads to confusion amongst physicians and difficulty in choosing the correct treatment for these athletes.
Purpose: To identify and compare surgical repair techniques used for core muscle injury and clinical outcomes to assess treatment effectiveness.
METHODS:
A systematic review of five databases was performed to identify surgical repair techniques as well as the structures repaired for core muscle injury. Clinical outcomes included pain, patient satisfaction, return to sport, revision/re-operations, recovery progress, failure, and complications.
RESULTS:
Fifty-five studies with 4,161 patients were included; 420 (420/4161, 10%) patients had a CMI and 2,633 (2633/4161, 63%) had a posterior abdominal wall hernia. Studies were categorized by the structures repaired and the surgical technique used: 13% (7/55) CMI with adductor longus-rectus abdominis aponeurosis pathology, 60% (33/55) Posterior Abdominal Wall-hernia, 20% (11/55) Posterior Abdominal Wall with/without adductor longus release, 4% (2/55) Posterior Abdominal Wall with detachment inguinal ligament, 4% (2/55) External Oblique tear with/without ilioinguinal nerve entrapment. Patients with CMI had a 57% (240/420) satisfaction rating and a 83% (347/420) return to sport rate (average 13.9 weeks), compared to Posterior Abdominal Wall-hernia satisfaction (720/2509, 29%) and return to sport (1925/2509, 77% at 10.8 weeks), Posterior Abdominal Wall with/without adductor longus release satisfaction (492/878, 56%) and return to sport (613/878, 70% at 12.5 weeks). Revisions/re-operations for CMI were reported by 1% (6/420) of participants, and were similar across all groups. Complications for CMI were reported by 5% (23/420) participants, the two most common reasons being hematomas (15/23, 65%) and superficial wound infections (6/23, 26%). Detachment inguinal ligament with posterior inguinal repair was greater than CMI (12/121, 10%); however, the other techniques had a lower complication rate—Posterior Abdominal wall-hernia (2%), Posterior Abdominal Wall with/without adductor longus release (4%), and External Oblique tear with/without ilioinguinal nerve entrapment (4%). No failures were reported in CMI and were less than 1% across all diagnoses.
DISCUSSION AND CONCLUSION: Core Muscle injury surgical repair techniques yielded improved satisfaction and overall return to sport, compared to posterior abdominal wall-hernia and posterior abdominal wall with/without adductor longus release. However, the average timeframe was the longest reported (13.9 weeks) among all categories. Moreover, the complication rate for Core Muscle Injury (7%) exceeded most all other diagnostic classifications except for detachment inguinal ligament with posterior inguinal wall repair (10%).


Identification
Screening
Eligibility
Included
Records identified through PubMed searching (n = 11,781)
Additional records identified through other sources (n = 1,710)
Records after duplicates removed (n = 2,933)
Records screened (n = 284)
Records excluded (n = 2,649)
Full-text articles assessed for eligibility (n = 142)
Full-text articles excluded, with reasons:
Duplicate (n = 4)
Not Accessible for Library (n = 2)
Non-surgical design (n = 16)
Excludes Core Muscle Injury (n = 14)
Expert Opinion, Review Article, or Clinical Trial Description (n = 34)
Abstract Only (n = 5)
Non-English (n = 9)
Does Not Discuss post-surgical outcomes (n = 3)
Studies included in qualitative synthesis (n = 55)
Studies included in quantitative synthesis (meta-analysis) (n = 0)