
Medical Policy



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***Current Policy Effective Date: 3/1/26**
(See policy history boxes for previous effective dates)

Title: Surgery for Groin Pain in Athletes

Description

Sports-related groin pain, commonly known as athletic pubalgia or sports hernia, is characterized by disabling activity-dependent lower abdominal and groin pain not attributable to any other cause. Athletic pubalgia is most frequently diagnosed in high-performance male athletes, particularly those who participate in sports that involve rapid twisting and turning such as soccer, hockey, and football. For patients who fail conservative therapy, surgical repair of any defects identified in the muscles, tendons, or nerves has been proposed.

Medical Policy Statement

Surgical treatment of groin pain* in athletes who present with the absence of a preoperative anatomical defect is considered experimental/investigational. There is insufficient evidence to determine that the technology results in an improvement in net health outcomes

*Also known as athletic pubalgia, Gilmore groin, osteitis pubis, pubic inguinal pain syndrome, inguinal disruption, slap shot gut, sportsmen groin, footballers groin injury complex, hockey groin syndrome, athletic hernia, sports hernia or core muscle injury

Inclusionary and Exclusionary Guidelines

N/A

CPT/HCPCS Level II Codes *(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure.)*

Established codes:

N/A

Other codes (investigational, not medically necessary, etc.):

27299

49659

49999

Note: Individual policy criteria determine the coverage status of the CPT/HCPCS code(s) on this policy. Codes listed in this policy may have different coverage positions (such as established or experimental/investigational) in other medical policies.

Background

Groin Pain in Athletes

Groin pain in athletes is a poorly defined condition for which there is no consensus on cause and/or treatment.(1) Alternative names include Gilmore groin, osteitis pubis, pubic inguinal pain syndrome, inguinal disruption, slap shot gut, sportsmen groin, footballers groin injury complex, hockey groin syndrome, athletic hernia, sports hernia, and core muscle injury. In a systematic review involving 1571 patients, Kraeutler et al (2021) found that the most common terminology used to describe the diagnosis was "athletic pubalgia", followed by "sports hernia".(2)

Some believe the groin pain is an occult hernia process, a prehernia condition, or an incipient hernia, with the major abnormality being a defect in the transversalis fascia, which forms the posterior wall of the inguinal canal. Another theory is that injury to soft tissues that attach to or cross the pubic symphysis is the primary abnormality. The most common of these injuries are thought to be at the insertion of the rectus abdominis onto the pubis, with either primary or secondary pain arising from the adductor insertion sites onto the pubis. It has been proposed that muscle injury leads to failure of the transversalis fascia, with a resultant formation of a bulge in the posterior wall of the inguinal canal.(1) Osteitis pubis (inflammation of the pubic tubercle) and nerve irritation/entrapment of the ilioinguinal, iliohypogastric, and genitofemoral nerves are also believed to be sources of chronic groin pain. A 2015 consensus agreement has recommended the more general term groin pain in athletes, with specific diagnoses of adductor-related, iliopsoas-related, inguinal related, and pubic-related groin pain.(3)

An association between femoroacetabular impingement (FAI) and groin pain in athletes has been proposed. It is believed that if FAI presents with limitations in hip range of motion, compensatory patterns during athletic activity may lead to increased stresses involving the abdominal obliques, distal rectus abdominis, pubic symphysis, and adductor musculature. A 2015 systematic review of 24 studies that examined the co-occurrence of FAI and groin pain in athletes found an overlap of the 2 conditions that ranged from 27% of hockey players to 90% of college football players who presented with hip and groin pain.(4) Surgery for sports-related groin pain has been performed concurrently with treatment of FAI or following FAI surgery if symptoms did not resolve.

Diagnosis

A diagnosis of groin pain in athletes is based primarily on history, physical exam, and imaging. The clinical presentation will generally be a gradual onset of progressive groin pain associated with the activity. A physical exam will not reveal any evidence for a standard inguinal hernia or groin muscle strain. Imaging with magnetic resonance imaging or ultrasound is generally done as part of the workup. In addition to the exclusion of other sources of lower abdominal and groin pain (e.g., stress fractures, FAI, labral tears), imaging often leads to incidental, misleading findings.(5)

TREATMENT

Conservative

Many injuries will heal with conservative treatment, which includes rest, icing, nonsteroidal anti-inflammatory drugs, and rehabilitation exercises. A physical therapy (PT) program that focuses on strength and coordination of core muscles acting on the pelvis may improve recovery. In a 1999 study, 68 athletes with chronic adductor-related groin pain were randomized to 8 to 12 weeks of an active training PT program that focused on strength and coordination of core muscles, particularly adductors, or to standard PT without active training.(6) At 4 months posttreatment, 68% of patients in the active training group had returned to sports without groin pain compared with 12% in the standard PT group. At 8- to 12- year follow-up, 50% of athletes in the active training group rated their outcomes as excellent compared with 22% in the standard PT group.(6) For in-season professional athletes, injections of corticosteroid or platelet-rich plasma, or a short corticosteroid burst with taper have also been used.

Surgical

Surgical treatment has been recommended for patients who have failed at least 3 months of conservative treatment. One approach consists of open or laparoscopic sutured hernia repair with mesh reinforcement of the posterior wall of the inguinal canal. Laparoscopic procedures may use either a transabdominal preperitoneal or an extraperitoneal approach. A variety of musculotendinous defects, nerve entrapments, and inflammatory conditions have been observed with surgical exploration. Meyers et al (2008) have proposed that any of the 17 soft tissues that attach or cross the pubic symphysis can be involved, leading to as many as 26 surgical procedures and 121 different combinations of procedures that address the various core muscle injuries.(8) The objective is to stabilize the pubic joint by tightening or broadening the attachments of various structures to the pubic symphysis and/or by loosening the attachments or other supporting structures via epimysiotomy or detachment.

Because various surgical procedures used to treat sports-related groin pain have reported success, it has been proposed that general fibrosis from any surgery may act to stabilize the anterior pelvis and thus play a role in improved surgical outcomes.

Summary of Evidence

For individuals who have sports-related groin pain who receive mesh reinforcement, the evidence includes 2 RCTs and a large prospective series. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. Results of the RCTs have suggested that, in carefully selected patients, mesh reinforcement results in an earlier return to play.

However, a large prospective series from 2016 indicated that only about 20% of patients with chronic groin pain benefit from inguinal surgery. Further study is needed to define the patient population that would benefit from this treatment approach. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have sports-related groin pain who receive surgical repair or release of soft tissue, the evidence includes a large case series. Relevant outcomes are symptoms, functional outcomes, and treatment-related morbidity. The case series reported surgical repair or release of soft tissue as an alternative approach for the treatment of groin pain; the study included a review (completed in 2008) of medical records spanning 2 decades and over 5000 cases. More recent reports on these procedures from other institutions are needed. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Rationale

Evidence reviews assess the clinical evidence to determine whether the use of a technology improves the net health outcome. Broadly defined, health outcomes are length of life, quality of life, and ability to function including benefits and harms. Every clinical condition has specific outcomes that are important to patients and to managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms. The following is a summary of the key literature to date.

Sports-related groin pain has a variable natural history, with an uncertain time course of the disorder. In addition, pain and functional ability are subjective outcomes and, thus, may be particularly susceptible to placebo effects. Because of these factors, controlled trials are essential to demonstrate the clinical effectiveness of surgical treatment of athletic pubalgia compared with alternatives such as continued medical management.

In 2015, a consensus report call the Doha agreement recommended the use of specific diagnoses of adductor-related, iliopsoas-related, inguinal-related, or pubic-related groin pain in place of athletic pubalgia or sportsman's hernia.(3) However, these terms have yet to be routinely used in the published literature. Because it is not possible to determine which patient subgroups were studied, the terminology from the published reports is used. The only validated patient-reported outcome measure for pain and dysfunction in the groin area in young and middle-aged patients that was identified in the Doha report is the Copenhagen Hip and Groin Outcome Score.(9)

Mesh Reinforcement

Clinical Context and Therapy Purpose

The purpose of mesh reinforcement is to provide a treatment option that is an alternative to or an improvement on existing therapies for individuals with groin pain.

Review of Evidence

Randomized Controlled Trials

Paajanen et al (2011) reported on a multicenter RCT comparing surgical treatment with conservative therapy in 60 athletes who had suspected sports hernia.⁽¹⁰⁾ Of the 60 athletes (including 31 national-level soccer players), 36 (60%) were totally disabled from their sport and 24 (40%) had a marked limitation in training and competing. For inclusion in the trial, the location of pain had to be rostral to the inguinal ligament in the deep inguinal ring at palpation or the insertion point of the adductor tendons. Exclusion criteria were isolated tendonitis of the adductor muscles or tendons without groin pain rostral to the inguinal ligament, obvious inguinal hernias, or suspicion of inguinal nerve entrapment. Participants had to have the desire to continue sports at the same level as before the groin injury. Pubic bone marrow edema was identified by magnetic resonance imaging (MRI) in 58% of patients. For participants (38%) who had a normal MRI in the pubic area, the pain was attributed to the insufficiency of the posterior wall of the inguinal canal. After at least three months of groin symptoms, patients were randomized to surgical or conservative treatment groups. Conservative treatment included at least two months of active physical therapy that focused on improving coordination and strength of core muscles, along with corticosteroid injections and oral anti-inflammatory analgesics. Surgical treatment consisted of laparoscopic total extraperitoneal repair with mesh placed behind the pubic bone and/or posterior wall of the inguinal canal. Ten percent of the patients also underwent open tenotomy of the adductor magnus or longus. Of the 30 surgically treated athletes, 27 (90%) returned to sports activities by 3 months compared with 8 (27%) of the nonoperative group. At 1, 3, 6, and 12 months after treatment, visual analog scale (VAS) scores for pain were significantly lower in the surgically treated group ($p < 0.001$). At 12 months, mean VAS scores for pain were less than two in both groups. However, among the 30 patients assigned to the conservative treatment group, 7 (23%) crossed over to surgery after six months with successful return to sport, 4 (13%) discontinued their sport of choice, and 16 (53%) were left with disabling symptoms after 12 months but chose not to undergo surgery.

An RCT by Ekstrand and Ringborg (2001) randomized 66 male soccer players to hernioplasty plus neurotomy ($n=17$), physical therapy ($n=14$), strength training of abdominal muscles ($n=18$), or a no treatment control ($n=17$).⁽¹¹⁾ All patients had an incipient hernia determined by herniography and/or positive nerve block test of the ilioinguinal or iliohypogastric nerves. The VAS scores for pain were assessed at 3- and 6-months during coughing, sit-ups, jogging, kicking, and sprinting. The VAS scores for pain in the control, physical therapy, and training groups were generally unchanged at 3 and 6 months, although results were analyzed using nonparametric tests instead of the more appropriate repeated-measures or mixed-effects analysis. The VAS scores improved significantly more for the surgery group than for the 3 other groups ($p < 0.01$). Strengths of this study included the active comparison groups and careful selection of patients. However, results are difficult to interpret due to the combined surgical procedure of hernioplasty plus neurotomy.

Observational Studies

Nonrandomized comparative and uncontrolled studies can sometimes provide useful information on health outcomes but are prone to biases such as noncomparability of treatment groups, the placebo effect, and variable natural history of the condition. A number of observational series have reported on surgical outcomes.^(8,11-18) However, these studies enrolled variable patient populations and used different surgical techniques. All studies

reported that a high percentage of patients returned to full sports activities, but there were no control groups for comparison.

Kopelman et al (2016) reported on a prospective series of 246 male patients with chronic groin pain.(19) All patients underwent an ultrasound, and 98 also underwent an MRI. Of the 246 patients, 209 underwent conservative treatment with rest and nonsteroidal anti-inflammatory drugs, after which 51 (21%) of 246 underwent inguinal surgery. Another 37 (15%) patients were diagnosed by imaging with noninguinal pathologies such as inflammation of the pubic bone and symphysis pubis, rectus abdominis muscles, and hip joint pathologies. Of the 51 who underwent surgery (mesh repair, oblique aponeurosis release, neurolysis), a direct or an indirect hernia was observed in 18 (35%) patients. In the remainder (65%), no abnormalities were found. There were two surgical failures, and all other patients returned to full sports activity within 4.3 weeks. In this series, most patients did not require surgery, and the authors commented that pubic and suprapubic symptomatology should be differentiated from inguinal and adductor complaints.

Section Summary: Mesh Reinforcement

The evidence on mesh reinforcement for inguinal-related groin pain includes 2 RCTs and a large prospective series. Results of the RCTs have suggested that, in carefully selected patients, mesh reinforcement results in an earlier return to play. However, a 2016 large prospective series indicated that only about 20% of patients with chronic groin pain benefit from inguinal surgery. Selection of patients in this series excluded patients with noninguinal pathology and failure of a conservative treatment trial of complete rest and nonsteroidal anti-inflammatory drugs. Further study is needed to corroborate these results and to define the patient population that would benefit from this treatment approach.

Surgical Repair or Release of Soft Tissue

Observational Studies

There is more limited literature on the repair or release of soft tissue. An example of a large case series is a retrospective review by Meyers et al (2008) that reported on the surgical treatment of 5218 patients diagnosed with athletic pubalgia over the prior 2 decades.(8) Initially, diagnoses were made by history and physical examination, with MRI used in the more recent years. Referrals increased from 3 per week in 1987 to 25 per week in 2008. Patients treated with surgery ranged from 11 to 71 years of age; women comprised about 8% of the group. The surgeries involved 26 different procedures of reattachments and/or releases of soft tissues that normally attach or cross the pubic symphysis. The authors reported that 95.3% of the patients returned to full play within 3 months of surgery. For a subgroup of athletes treated in-season, 90% were able to return to full play within 3 weeks. Adverse surgery-related events included dysesthesias (0.3%), significant hematomas (0.3%), and vein thrombosis (0.1%), all of which resolved within 1 year.

Section Summary: Surgical Repair or Release of Soft Tissue

An alternative approach to the treatment of groin pain in athletes has been reported in a large case series. This retrospective study included a review of medical records spanning 2 decades and over 5000 cases. There was no information on prior conservative treatments. More recent reports on these procedures from other institutions are lacking.

Supplemental Information

PRACTICE GUIDELINES AND POSITION STATEMENTS

American Academy of Orthopaedic Surgeons

The American Academy of Orthopaedic Surgeons has an online educational website, last reviewed in 2022, on sports hernia (athletic pubalgia).(20) The Academy indicated that a sports hernia is a painful soft tissue injury that occurs in the groin area. The Academy advised patients that, “In many cases, 4 to 6 weeks of physical therapy will resolve any pain and allow an athlete to return to sports. If, however, the pain comes back when you resume sports activities, you may need to consider surgery to repair the torn tissues.”

American College of Occupational and Environmental Medicine

The American College of Occupational and Environmental Medicine (ACOEM) released a guideline on hip and groin disorders in 2019.(21) For the treatment of groin strains, sports hernias, or adductor-related groin pain, the ACOEM recommends work and activity modifications (strength of evidence [SOE]: recommended, insufficient evidence; level of confidence [LOC]: moderate), nonsteroidal anti-inflammatory drugs (SOE: recommended, insufficient evidence; LOC: moderate), and ice or heat or wraps (SOE: recommended, insufficient evidence; LOC: low).

U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATIONS

Not applicable.

Regulatory Status

Treatment of sports-related groin pain is a surgical procedure and, as such, is not subject to regulation by the U.S. Food and Drug Administration.

Government Regulations

National:

There is no national coverage determination specifically addressing surgical treatment for groin pain in athletes.

Local:

There is no local coverage determination.

(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)

Related Policies

- Recombinant and Autologous Platelet-Derived Growth Factors as a Treatment of Wound Healing and Other Non-Orthopedic Conditions
 - Surgical Treatment of Femoroacetabular Impingement
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References

1. Litwin DE, Sneider EB, McEnaney PM, et al. Athletic pubalgia (sports hernia). *Clin Sports Med.* Apr 2011;30(2):417-434. PMID 21419964
2. Kraeutler MJ, Mei-Dan O, Belk JW, et al. A Systematic Review Shows High Variation in Terminology, Surgical Techniques, Preoperative Diagnostic Measures, and Geographic Differences in the Treatment of Athletic Pubalgia/Sports Hernia/Core Muscle Injury/Inguinal Disruption. *Arthroscopy.* Jul 2021; 37(7): 2377-2390.e2. PMID 33845134
3. Weir A, Brukner P, Delahunt E, et al. Doha agreement meeting on terminology and definitions in groin pain in athletes. *Br J Sports Med.* Jun 2015;49(12):768-774. PMID 26031643
4. Munegato D, Bigoni M, Gridavilla G, et al. Sports hernia and femoroacetabular impingement in athletes: A systematic review. *World J Clin Cases.* Sep 16 2015;3(9):823-830. PMID 26380829
5. Khan W, Zoga AC, Meyers WC. Magnetic resonance imaging of athletic pubalgia and the sports hernia: current understanding and practice. *Magn Reson Imaging Clin N Am.* Feb 2013;21(1):97-110. PMID 23168185
6. Holmich P, Uhrskou P, Ulnits L, et al. Effectiveness of active physical training as treatment for long-standing adductor-related groin pain in athletes: randomised trial. *Lancet.* Feb 6 1999;353(9151):439-443. PMID 9989713
7. Holmich P, Nyvold P, Larsen K. Continued significant effect of physical training as treatment for overuse injury: 8- to 12-year outcome of a randomized clinical trial. *Am J Sports Med.* Nov 2011;39(11):2447-2451. PMID 21813441
8. Meyers WC, McKechnie A, Philippon MJ, et al. Experience with "sports hernia" spanning two decades. *Ann Surg.* Oct 2008;248(4):656-665. PMID 18936579
9. Thorborg K, Holmich P, Christensen R, et al. The Copenhagen Hip and Groin Outcome Score (HAGOS): development and validation according to the COSMIN checklist. *Br J Sports Med.* May 2011;45(6):478-491. PMID 21478502
10. Paajanen H, Brinck T, Hermunen H, et al. Laparoscopic surgery for chronic groin pain in athletes is more effective than nonoperative treatment: a randomized clinical trial with magnetic resonance imaging of 60 patients with sportsman's hernia (athletic pubalgia). *Surgery.* Jul 2011;150(1):99-107. PMID 21549403
11. Ekstrand J, Ringborg S. Surgery versus conservative treatment in soccer players with chronic groin pain: A prospective randomised study in soccer players. *Eur J Sports Traumatol Rel Res.* 2001;23:141-145.
12. Ahumada LA, Ashruf S, Espinosa-de-los-Monteros A, et al. Athletic pubalgia: definition and surgical treatment. *Ann Plast Surg.* Oct 2005;55(4):393-396. PMID 16186706
13. Steele P, Annear P, Grove JR. Surgery for posterior inguinal wall deficiency in athletes. *J Sci Med Sport.* Dec 2004;7(4):415-421; discussion 422-413. PMID 15712496

14. Paajanen H, Syvahuoko I, Airo I. Totally extraperitoneal endoscopic (TEP) treatment of sportsman's hernia. Surg Laparosc Endosc Percutan Tech. Aug 2004;14(4):215-218. PMID 15472551
15. Kumar A, Doran J, Batt ME, et al. Results of inguinal canal repair in athletes with sports hernia. J R Coll Surg Edinb. Jun 2002;47(3):561-565. PMID 12109611
16. Irshad K, Feldman LS, Lavoie C, et al. Operative management of "hockey groin syndrome": 12 years of experience in National Hockey League players. Surgery. Oct 2001;130(4):759-764; discussion 764-756. PMID 11602909
17. Roos MM, Bakker WJ, Goedhart EA, et al. Athletes with inguinal disruption benefit from endoscopic totally extraperitoneal (TEP) repair. Hernia. Jun 2018; 22(3): 517-524. PMID 29383598
18. Meuzelaar RR, Visscher L, den Hartog FPJ, et al. Athletes treated for inguinal-related groin pain by endoscopic totally extraperitoneal (TEP) repair: long-term benefits of a prospective cohort. Hernia. Oct 2023; 27(5): 1179-1186. PMID 37391498
19. Kopelman D, Kaplan U, Hatoum OA, et al. The management of sportsman's groin hernia in professional and amateur soccer players: a revised concept. Hernia. Feb 2016;20(1):69-75. PMID 25380561
20. American Academy of Orthopaedic Surgeons, Wilkerson R. Ortho Info: Sports Hernia (Athletic Pubalgia). 2017; <http://orthoinfo.aaos.org/topic.cfm?topic=A00573>. Accessed December 19, 2023.
21. American College of Occupational and Environmental Medicine. Hip and Groin Disorders. 2019; <https://www.dir.ca.gov/dwc/DWCPropRegs/MTUS-Evidence-Based-Updates-August2019/Final-Regulations/Hip-Groin-DisordersGuidelines.pdf.pdf>. Accessed December 19, 2023.

The articles reviewed in this research include those obtained in an Internet based literature search for relevant medical references through 11/10/25, the date the research was completed.

Joint BCBSM/BCN Medical Policy History

Policy Effective Date	BCBSM Signature Date	BCN Signature Date	Comments
3/1/20	12/17/19		Joint policy established
3/1/21	12/15/20		Routine maintenance
3/1/22	12/14/21		Routine maintenance
3/1/23	12/20/22		Routine maintenance (slp)
3/1/24	12/19/23		Routine maintenance (slp) Vendor managed: N/A
3/1/25	12/17/24		Routine maintenance (slp) Vendor managed: N/A
3/1/26	12/16/25		Routine maintenance (slp) Vendor managed: N/A Policy reformatted

Next Review Date: 4th Qtr, 2026

Pre-Consolidation Medical Policy History

Original Policy Date	Comments
BCN: NA	Revised: NA
BCBSM: 10/1/13	Revised: 11/6/18

BLUE CARE NETWORK BENEFIT COVERAGE
POLICY: SURGERY FOR GROIN PAIN IN ATHLETES

I. Coverage Determination:

Commercial HMO (includes Self-Funded groups unless otherwise specified)	Not covered
BCNA (Medicare Advantage)	Refer to the Medicare information under the Government Regulations section of this policy.
BCN65 (Medicare Complementary)	Coinsurance covered if primary Medicare covers the service.

II. Administrative Guidelines:

- The member's contract must be active at the time the service is rendered.
- Coverage is based on each member's certificate and is not guaranteed. Please consult the individual member's certificate for details. Additional information regarding coverage or benefits may also be obtained through customer or provider inquiry services at BCN.
- The service must be authorized by the member's PCP except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Services must be performed by a BCN-contracted provider, if available, except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Payment is based on BCN payment rules, individual certificate and certificate riders.
- Appropriate copayments will apply. Refer to certificate and applicable riders for detailed information.
- CPT - HCPCS codes are used for descriptive purposes only and are not a guarantee of coverage.