Inguinal-related groin pain in athletes: a pathological potpourri

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Athletes who have pain in the inguinal canal region with no actual hernia present as a common challenge in clinical practice. While the differential diagnosis of groin pain is broad, our editorial focuses on musculoskeletal causes.

A survey of 23 international groin pain experts using the case of a male football player with pain in the inguinal region was performed in 2014. The experts were asked which term they would use to describe the diagnosis. The 23 experts used 22 different terms, including inguinal-related groin pain, sportsman’s hernia, incipient hernia, inguinal disruption, posterior wall weakness, Gilmore’s groin and core muscle injury to name but a few.

Following a subsequent expert consensus meeting on terminology and definitions, this group agreed on ‘inguinal-related groin pain’ as the preferred term. While there is debate about the appropriate terminology, there is even more uncertainty surrounding the underlying pathology. There are numerous hypotheses on the pathology of inguinal-related groin pain. This ‘pathological potpourri’ causes confusion in the literature and in clinical practice.

Some of the different theories reported in the literature are listed in table 1. We have included an illustration with some of the most prominent theories (figure 1).

SINGLE UNIFYING THEORY OF EVERYTHING?

So how should we interpret all these different hypotheses?

It is tempting to turn it into a contest and declare a winner. There is a realistic probability that there are different causes between individuals. Trying to prove a single unifying underlying pathology is likely to be fruitless. Most theories are based on two main ideas or combinations of these ideas:

1. Nerve irritation (including posterior wall bulge causing compression or entrapment) of the ilioinguinal/iliohypogastric/genitofemoral nerve(s) in the inguinal region.

2. Musculoskeletal pathology (including aponeurotic tears and inguinal ligament enthesopathy).

These two groups may overlap through overload of several anatomical structures in the inguinal canal. Anatomical variations of the cutaneous branches of the ilioinguinal nerve and genital branch of the genitofemoral nerve should also be considered as a potential explanation for variations in pain distribution.

Medical teams treating groin pain continue to see patients with inguinal-related groin pain who have different clinical presentations. Some patients present with brief pain only related to certain explosive movements, while others have pain for weeks or months following sporting activity. Patients also report different pain types (electric, burning, stabbing, etc). There may be tenderness of different structures during examination, while others are pain free in the clinic, and only precise history or sports-specific testing combined with appropriate imaging if needed (such as excluding inguinal hernia), leads us to the diagnosis.

MULTIPLE THEORIES CAN EXPLAIN DIFFERENT TREATMENT CHOICES

The varying theories on pathoetiology seem to have influenced treatments. Currently, the literature on inguinal-related groin pain is heavily focused on surgical treatment, with multiple options reported. Surgical approaches can be broadly categorised into two groups that mirror some of the proposed pathologies:

1. Anterior open mesh or non-mesh reinforcement of the posterior wall, with or without neurectomy.

2. Posterior endoscopic mesh reinforcement of the posterior wall, with or without inguinal ligament ‘release’.

A recent multicentre randomised controlled trial comparing open and endoscopic repair...
did not find clinically relevant differences in outcomes.\(^4\)
Our previous systematic review on the management of groin pain in athletes found both a lack of high-quality studies, and an association where studies with worse methods showed better results.\(^5\)

**HOW DO WE ADVANCE?**
We recognise that ‘inguinal-related groin pain’ is a vague term. However, if we embrace the current variation in pathological explanations, then we cannot support any further distinction in exact pathology. We, therefore, currently continue to recommend using ‘inguinal-related groin pain’.

To advance the field, we need a broad approach and embrace that there is uncertainty. It is a challenge to try and test the multiple hypotheses. We need to develop an encompassing approach, including:
1. Reliable tests of the suggested pathologies
1. Posterior wall bulge
2. Ilioinguinal nerve adhesions
3. Ilioinguinal or obturator nerve entrapment
4. Tears in external oblique aponeurosis
5. Enthesopathy at inguinal ligament insertion

Figure 1  Potential causes of inguinal pain in athletes.

2. Knowledge of normal findings in athletic populations
3. Acceptance that various pathologies may co-exist and are not mutually exclusive
4. Understanding that there is significant variation between individuals in anatomy and nerve distribution.
5. Open minds.

At present, these are lacking. It will be a complex and time-consuming process to sift through the various potpouri ingredients. We are more likely to progress if we collaborate on projects to improve study power and share ideas. It is important to recognise that the focus here is on underlying pathology, but as with all musculo-skeletal pain conditions the biopsychosocial factors will play their role too. This is also something that needs to be explored further.

In summary, simplistic thinking about single pathologies in inguinal-related groin pain is preventing progress. Acknowledging the current pathological potpouri will allow progress and enable more encompassing approaches.

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REFERENCES