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REVIEW

A SYSTEMATIC REVIEW OF THE LIGAMENTUM CAPITIS FEMORIS: EMBRYOLOGY, ANATOMY, POTENTIAL FUNCTION, AND ABSENCE

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ABSTRACT

Ligamentum capitis femoris (LCF) is a robust ligament that connects the femoral head to the pelvis, and it derives from the mesenchymal cells. It is composed of dense, regular connective tissue and collagen. The evidence for its involvement in active hip joint motion is limited. The findings suggest that LCF stabilises the hip joint while also playing a role in preventing hypermobility. Its primary role is to prevent excessive motion of the hip joint rather than facilitate movements, as evidence for its involvement in active hip joint motion is limited. Specifically, the LCF restricts hip flexion, extension and lateral rotation, as studies indicate that individuals with an absent or torn LCF exhibit an increased range of motion compared to those with an intact LCF. Although a complete absence of LCF is rare, it is observed frequently in patients with developmental dysplasia of the hip (DDH). A condition characterised by abnormal hip development in children. Absence of LCF may be unilateral or bilateral. In cases of unilateral absence, the limb with the LCF intact was often observed to maintain the normal robust strength despite the developmental abnormalities. Given that DDH affects the mesenchymal cell development, LCF is particularly susceptible to underdevelopment or absence due to its embryological origin. Damage to or absence of LCF may lead to microinstability of the hip joint, whereby the femoral head is not properly aligned within the acetabulum. Over time, persistent microinstability may result in more pronounced hip instability as the cartilage is challenged by the constant friction. This may cause increasing pain to the patient as a microinstability of the hip joint progresses to a more severe and loose state of the joint. Nevertheless, pain related to an LCF tear is particularly prevalent in athletes rather than in other groups. Athletes are at a higher risk of developing hip joint instability faster due to the high frequency of activity and extreme use of the hip joint.

KEYWORDS

Ligamentum capitis femoris, LCF, damage or absence of ligamentum capitis femoris, embryological and anatomical review of LCF, potential function of ligamentum capitis femoris

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INTRODUCTION

This systematic review article discusses the function and general purpose of ligamentum capitis femoris (LCF), which is also called the round ligament of the head of the femur or ligamentum teres. LCF is a ligament that is not fully understood in terms of function and importance, and the research conducted so far is scarce. This discussion will therefore be performed by reviewing relevant research articles that are available. The goal is to collect the information available to try and deepen the understanding of LCF in relation to its function, whilst urging the possibility of potential further research. The abbreviation LCF will be used throughout the article from now on. The objective of this article is to discuss the function and purpose of LCF. To do so, this article will discuss how an absence or damaged LCF affects patients.

METHODS

The methods used for this systematic review article started with collecting sources related to the topics that needed to be discussed. The research done on LCF is scarce, so all sources were handpicked for their relevance. The databases that were used to collect the articles were PubMed, Google Scholar and ScienceDirect. Collecting sources started with the embryology and origin of LCF. Then the articles relating to the most common anatomy of LCF, the femoral head and the acetabular fossa. Articles only describing potential variations related especially to the vessels were excluded to keep the sources used in this article related to its objective. Finally, articles related to the damage of LCF were compiled, along with articles researching the actual embryological absence of the ligament.

A total of 18 articles were collected as references after evaluating their relevance to this article's objective. 12 of the articles were found using PubMed, 5 articles were found on Google Scholar, and 1 article was found on ScienceDirect. Some articles were found on both ScienceDirect and PubMed, but since PubMed sources were gathered first, only the new articles found on ScienceDirect were taken. After handpicking the relevant articles and adding them to Mendeley, the articles were again subdivided based on their topic. There were 3 articles related strictly to the embryology of LCF and the femoral head. 5 articles related to the anatomy of LCF. 7 articles related to the injury of LCF. Lastly, 3 articles related to the embryological absence of LCF. There is, therefore, a total of 4 subgroups used in a specific order to collect the findings and discuss the material. This is shown in *Figure 1,* below.

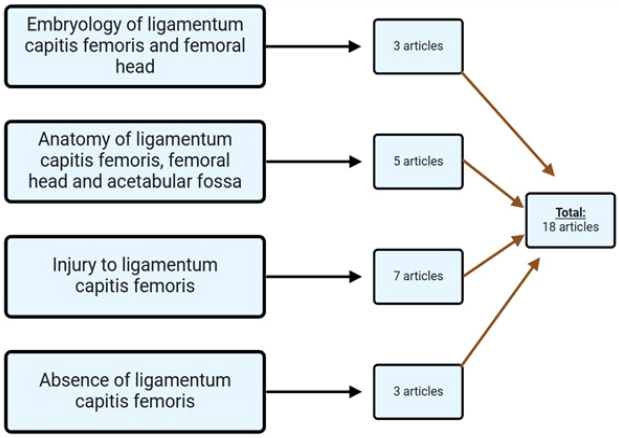


Figure 1. *Available research articles are quite limited to the topic related to LCF. A total of 18 articles were handpicked for their relevance, and information from these articles was collected with the aim of creating a future hypothesis that can be used for further research. Each article was placed in a subgroup based on its topic. Since each subgroup had a limited set of articles available, it was reasonable to create subgroups and divide this article into these four respective fields. Each subgroup contributed to this article as a whole when used together during the discussion section.*

RESULTS

Embryology of LCF

Brewster performed a light microscopy study on LCF and the acetabular fossa on 30 human foetuses of both genders. The foetuses were of different ages, spanning between 6.5 weeks and 22 weeks. In foetuses at the age of 8 weeks, mesenchyme cells forming the first part of the future LCF started to form. The second part of LCF was only formed due to what Brewster mentions as a result of proliferation in relation to the perichondrial mesenchyme within the chondro-epiphysis of the fovea capitis, which is where the ligament attaches to the head of femur. The overall conclusion was that the ligament arises from the embryonic mesenchyme of the hip joint. The blood vessels were developed at the end of week 12, and these vessels would then join or enter the ligament, depending on many observed variations[1].

Fritsch and Hegemann performed another study where the hip joint of foetuses and newborns were impregnated with epoxy. Three hip joints of foetuses and two hip joints of newborns were impregnated and then checked microscopically. They described the central part of LCF to be of dense regular connective tissue and a linear upgrowth of collagen in newborns. They refer to the ligament as a "strong" ligament because of the type of cell that was found in these newborns. The arteries were already found in 9-week-old foetuses, and the arteries would anastomose and become more branched the older the foetus was. This could potentially have a connection with further development of the hip joint[2]. Perumal, Woodley and Nicholson are supporting Brewster's findings, but they are also mentioning the same findings Fritz and Hegemann mentioned when it comes to the cellular components of the ligament. The dense regular connective tissue will reduce over time in a developing foetus, and there is a linear reduction compared with the increase in collagen, which is what Fritz and Hegemann had pointed

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out. Peruman, Woodley and Nicholson also mentioned the importance of the vessels that are both entering and coursing around the ligament. They point to the direction that a proper vascular development is important in order for the LCF to finish its development properly[3]. Brewster also made a hypothesis about this, as only the first part of the ligament started its development early[1].

Anatomy of LCF

The common anatomy related to LCF explains that it is a tendon composed of collagen fibres, fibrosis and adipose tissue. The artery inside the ligament contributes to approximately 25% of the overall blood supply to the femoral head[4]. The acetabular fossa is explained as a "horseshoe-shape" of the lunate surface at the hip joint, and the superior part of this horseshoe-shape is believed to be the most vascular portion[5]. LCF is the ligament that links the femoral head to the acetabular fossa[6]. Fovea capitis is associated with the femoral head and has been shown in studies to be more on the posterior part of the femoral head. This will aid directly in the anatomy of the femoral neck and the slight difference in femoral angles found in each individual. There are no drastic differences found in femoral neck angles between men and females in relation to fovea capitis and the attachment point of LCF, which relates to the position of the lesser and greater trochanter on the femur, and the head of femur[7].

Due to the attachment point of LCF, it is believed that the ligament may aid in constraining hip adduction. The LCF is therefore described to be a secondary stabiliser of the hip joint, which supports the other ligaments[8]. The vessels are decreasing in importance from the foetal stage to newborn, and from newborn to child. This may reflect the size of the ligament, as there is a variation in the length from individual to individual. The range of length related to LCF is noted to span from 25 to 35 mm[3,8–10]. LCF is a ligament composed of two different bands originating from the acetabular ligament and the acetabular notch[11]. LCF will usually arise along an inferior margin on a slightly more posterior view of the acetabulum and usually attaches with two bands at the ischial and pubic margins of the acetabular notch[12].

Damage and function related to LCF

LCF has been viewed as an embryological remnant of no important role mechanically, but it is considered to be a strong intra-articular ligament. It is believed to participate in constraining the hip joint in performing hyperadduction[9,10,12]. Additionally, LCF is believed to have a stabilising effect related to not just adduction, but also flexion and rotation of the hip joint. Due to this function, LCF is compared with the anterior cruciate ligament of the knee, as they both have similarities in terms of both mechanical function and histological features[10,12].

LCF tear can be difficult to diagnose. Some common symptoms may include pain in the hip and potentially a comfortless feeling in the area of the hip joint. A thorough physical examination is needed, together with a detailed history. The importance of knowing about the position of the leg and thigh during the moment of injury is of high clinical importance. During physical examination, a straight leg raise and a McCarthy test are recommended to verify a possible LCF tear. If LCF is torn, Cerezal describes that there could be signs of microinstability. Microinstability is connected to a femoral head that is not completely centred inside the acetabular fossa. Through a series of CT and MRI images, they concluded that the microinstability of the hip joint relates directly to an LCF tear. This should therefore be a clinical reason to provide surgery to avoid further development of hip joint instability[12].

The first symptom of an LCF tear is known external damage such as fractures to the head of femur or acetabular fossa, associated with deep pain in the hip[12,13]. Botser showed through research that there are different types of tears to LCF, and these tears are graded through Gray and Villar classification and New Descriptive classification[13]. A full-thickness tear was considered a low-grade tear with less than 50% of the ligament torn. A partial-thickness tear was a high-grade tear with more than 50% of the ligament torn. The last grade is a degenerate tear, which is a complete tear where LCF is no longer attached from the fovea capitis to the head of femur. This will be shown in *Figure 2*[13].

In terms of pain related to a tear or damage to LCF, there was no proven correlation between the Gray and Villar classification, New Descriptive classification, and how the

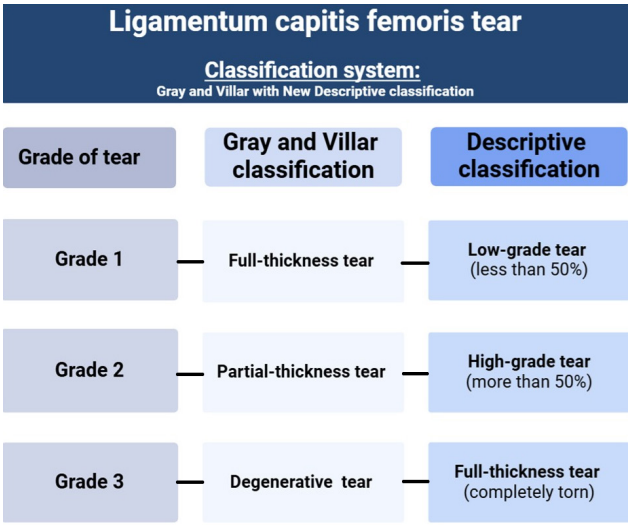


Figure 2. *This shows a grading system where Gray and Villar classification and New Descriptive classification are used to determine LCF tears, as utilised by Botser et al. This grading system categorises LCF tears into three grades (grades 1-3). Each grade of tear corresponds to a descriptive LCF tear category, which is the Gray and Villar classification and the New Descriptive classification. For instance, a Grade 1 tear will result in a full-thickness tear on Gray and Villar classification. A full-thickness tear, according to the New Descriptive classification, indicates a low-grade tear where less than 50% of the ligament has been torn.*

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patient described the pain. Botser's findings concluded that pain alone could not be a factor in diagnosing a patient with a torn LCF, as pain seems to be an individual factor. The grade of tear did not impact any findings related to the level of pain[13].

Botser additionally refers to the results related to physical examination, where the clinical findings between the patients with and without a tear seemed to be of little difference in certain movements. Movement of the hip joint in terms of internal rotation and flexion of the hip showed that patients with a completely torn LCF had greater movement compared to those with an intact LCF. Adduction, extension and external rotation were all of a few margins of difference[13]. Furthermore, Shu and Safran wrote an article discussing the hip movement. They concluded that hip instability or issues with movement of the hip are much more likely to be caused in cases where the iliofemoral ligament is damaged, rather than the LCF[14].

LCF tear has been considered to be the third most common reason for hip pain in athletes[15]. Phillips, Philippon, Letkemann, Simunovic and Ayeni are referring to sources explaining how important it is to reconstruct an LCF tear, as 5/6 patients (83%) of the athletes with LCF tear could return free of pain to daily activities or sport. The last case was a total hip replacement case and was considered outside of the scope despite reconstructing the LCF. The pain and function in the patients were recorded to improve when compared preoperatively to postoperatively. The operated patients reported no pain and a full range of mobility postoperatively. The LCF tear follows the Gray and Villar classification with New Descriptive classification[13,15]. It is reported that a type 2 tear (partial-thickness tear) was deemed irreparable with the use of reconstruction. These patients would need debridement rather than reconstruction. A type 1 tear (full thickness) was in contrast, deemed repairable with a reconstruction of LCF. These patients could return to athletic sports free of pain and with full mobility[15].

The LCF is under maximal tension once the hip is in maximal adduction, flexion or external rotation. The ligament is also considered to have an end-range stabilisation function in a fully ranged hip rotation[16]. A hip joint instability could additionally be proof of an LCF tear in combination with defects or damage related to the inferior portion of the acetabulum[12,16]. Rabbits have a similar hip to humans, so Baek, Chun, Rhyu, Yoon and Cho performed studies on rabbits to determine the importance of LCF. They reported findings of an increased range between the acetabulum and femur in rabbits that had a complete LCF tear. They also reported findings of increased damage to articular cartilage of the femur in rabbits with a complete LCF tear. The stabilisation of the hip joint was considered to be weakened in the rabbits who had a complete tear of the ligament, which then damaged the articular cartilage due to the instability between the head of femur and the acetabular fossa[16].

Jo, Hooke, An, K.N, Trousdale, R.T and Sierra performed a cadaver study to test the LCF in terms of joint stability and movement. By testing the hip joint on cadavers under the age of 70, they measured and evaluated the function and strength of LCF. Only the amputated healthy pelvises with the femur attached were used. The result they found was that hip extension, flexion, abduction and adduction at 2 Nm torque were nothing remarkable in relation to the strength of LCF. Despite changing the degree of flexion and extension in three different planes. They received a different result when the 4 Nm torque application was performed. There was a significant increase observed when the hip joint was at a flexed 60-degree and 90-degree angle. Previously, none of the three planes of flexion gave any different result at 2 Nm torque, but at 4 Nm torque, all 3 planes of flexion showed a different result of function related to LCF, especially for 60 and 90 degrees of the flexional planes. The most significant result was at 90-degree hip flexion. Their studies concluded with minimal participation in external rotation of the hip joint, but the ligament seemed to provide a function when the hip joint was flexed at 90 degrees. LCF at this angle is at maximal stretch. Together with the possible correlation of restraining excessive external rotation, they evaluated that LCF may function as a prevention for a potential dislocation of the hip joint. As the cadavers were stripped of muscles, they suggested that this type of dislocation could first and foremost be avoided through the use of muscles rather than just the LCF. LCF without muscles did have some relevance to constricting the hip joint and avoiding dislocation[17].

Absence of LCF

Tan and Wong conducted a study involving both humans and animals to investigate the role of LCF related to movement and hip stability. Additionally, they wanted to check the prevalence of how many cadavers would have problems or absences related to LCF. Among the 40 human cadavers that all exceeded the age of 60, four of the cadavers had an absence of the ligament. 3 of those 4 cadavers had unilateral absence, and the last cadaver had a bilateral LCF absence. Among the 36 other cadavers, LCF was considered strong in 26 cadavers, weak in 9 cadavers, and the last cadaver had a torn LCF. Additionally, they dissected 5 monkeys, 10 cats and 20 rats[18].

As they dissected the cadavers with an absence of LCF, they noted that it was considered strong in the cadavers that had one LCF missing on only one side. The unilateral ligament was therefore strong in all 3 cadavers despite having one LCF absent on the opposite side. For the animals, the ligament was present and strong in all of the specimens. They noted that among the total cadavers, 10% had a missing LCF. The 9 cadavers that had a notably weak LCF showed an LCF with the characteristic of a thin synovial membrane. These could easily be torn by pulling the head of femur away from the acetabular fossa. Tan

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and Wong noted that the cadaver with a torn LCF had no present medical history related to hip pain or hip instability. They suggest that LCF may not have a crucial role in terms of movement but is more important when it comes to the posture of the femur and hip. Therefore, its relation to the overall hip stability was suggested[18].

Another study related directly to LCF absence is in developmental dysplasia of the hip (DDH)[9]. DDH is a common disorder in children which requires treatment, as the hip and hip joint are underdeveloped and are therefore far less robust compared to a properly developed hip. In DDH, the head of femur may often be dislocated and displaced inside the acetabular fossa. LCF is often seen as hypertrophied or absent in DDH patients. Other studies referred to by this article state that the absence of LCF was as high as 19.8% in patients with DDH.

The study covers a total of 123 patients. 47 had a left hip joint DDH, 35 had a right hip joint DDH and 41 patients had a bilateral DDH. The patients were separated into different groups and received different surgical treatments. During surgery, a total of 24 patients had an absence of the ligament, resulting in 18.67% of the patients with DDH[8,9]. The majority of the patients who had an LCF present usually had the hypertrophied type. The patient with a high grade of DDH and absence of the ligament showed a highly underdeveloped acetabular fossa with underdeveloped structures all the way up to the wing of ilium. This additionally included the head of femur since the head of femur was often seen dislocated. With a dislocated femoral head, dysplastic acetabulum and potentially hypertrophied or absent LCF, they concluded that DDH of the hip and hip joint often affected LCF. The development of LCF is important in terms of hip stability with the femoral head, providing a more appropriate angulation of the hip joint and femur. Notably, a hip joint dislocation had a higher prevalence if the LCF was absent or hypertrophied[9].

Unilateral absence of the ligament is rare and happens in approximately 2-3% of the population. Umamaheswaran, Chigurupati, Solomon and Devi performed a study related to the Asian community who had an LCF absence, by performing case reports on cadavers. The Asian population who had the absence of LCF was estimated to be at 2.8%. Many of these cases were related to DDH. One of the cadavers was an approximately 55-year-old male. This male had a slightly laterally rotated left limb. After dissection, it was confirmed that the LCF was absent in this man. They additionally concluded throughout the study that if the LCF was absent, the obturator artery, which runs inside the ligament, was also absent. A patient with an absence of this ligament is likely to have a slight hip instability with a different femoral angle, and the absence of the ligament is often related to osseous abnormalities, also seen in DDH[8,9].

DISCUSSION

Based on the findings from the articles, there are numerous correlations between the findings. While simultaneously, two articles slightly contradict each other.

The first area of discussion. Although an association appears to exist between the microinstability of the hip joint and LCF, the overall hip stability was discussed to depend more heavily on other ligaments and the surrounding musculature than on LCF alone.

LCF is frequently affected in cases such as DDH. However, it is generally considered to be in addition together with more important structures when the stability of the hip joint is discussed. Movement of the hip appears to be largely unaffected by LCF. Nevertheless, LCF did prove to have an important role in preventing excessive hip joint mobility. In particular, to hyperadduction, hyperabduction, hyperextension and hyperflexion of the hip. This function is shown when LCF becomes taut during hip flexion, lateral rotation or during extension. Clinical observations indicate that individuals with an absent or damaged LCF could demonstrate a wider range of movement compared to those with an intact LCF. Hence, this confirms that LCF is likely to have some connection to preventing certain degrees of hip joint movement from occurring, rather than actively participating in creating movement.

The second area of discussion. Several of the studies reported differences in the femoral angle for those patients who have a fully intact LCF compared to those who do not. In cases where LCF is absent or ruptured, the femoral head may become unstable. This often resulted in a different angle on the femur, which would differ from the right and left lower limbs, especially in patients with a unilateral absence or a unilateral ruptured LCF. This type of consistent instability may cause progressive damage to the cartilage surrounding both the femoral head and the acetabular fossa. Hence, it potentially allows microinstability to progress into a clinically significant hip joint instability with additional symptoms. Studies addressing the surgical intervention of LCF support that surgery is needed when possible. The central argument was that surgical intervention should be considered for both symptomatic and asymptomatic patients. This includes patients who may experience an increased pain level after already experiencing pain, as well as asymptomatic patients who may experience pain later in case the damage potentially exacerbates. The difference in surgical treatment is typically determined by the grade of LCF tear.

There was a slight contradiction related to an LCF tear and pain between two of the articles. Botser hypothesised that hip pain could be used as a diagnostic indicator for an LCF tear. However, establishing an LCF tear is challenging to diagnose at the first meeting with the patient. After Botser evaluated the findings by using both Gray and Villar classification and New Descriptive classification, there was limited evidence to support the initial hypothesis that pain alone was a factor that could be used to diagnose a potential LCF tear. Furthermore, the evidence pointed to

that patients with an acute LCF tear would not necessarily be in more pain than patients who had damaged the ligament a while ago. In fact, the pain seemed to be absent in some of the patients despite the trauma caused to the LCF. Many of the patients were already symptom-free and did not know that they had a torn LCF after trauma. Among those who had acute pain, described the pain to be generally mild rather than severe. These patients showed no additional symptoms related to hip mobility.

Phillips, Philippon, Letkemann, Simunovic and Ayeni contradicted Botser by using a patient cohort study composed exclusively of athletes. These athletes were having pain and mobility problems related to hip instability and general hip joint pain. Surgery and treatment of the LCF tear improved not just their athletic performance, but also their quality of life during daily routines when the pain improved. They concluded that further research was needed but noted a potential association between LCF tears and pain among the athletic populations. Athletes in this article reported more pain and more pronounced functional limitations than the non-athletic patients in other articles mentioned. Although surgery improved the hip joint pain and mobility issues, there is a lack of information in this article. There is no standardised data on how long these patients experienced pain or how long ago it was that the LCF tear happened. The interval between the time of injury and surgical intervention has not been described, which makes it difficult to further discuss Botser's findings and weigh them up against this article.

The absence of the ligament is highly related to embryological cases, seen especially in DDH. When the mesenchymal cells are affected, the first part of the ligament may not be formed, or it may become severely affected to the degree where it looks more like a fragile synovial membrane. In relation to an absent LCF, there were cases mentioned related to DDH with only a unilateral absence. The remaining LCF on the opposite side proved too often be strong and robust due to its embryological origin and collagen. There was no information on how these patients experienced hip joint stability differences on the right or left side, as no patient history was mentioned. This pattern was as mentioned earlier, consistent across many of the articles reviewed. The overall conclusion was that very few individuals experienced clinical problems related to an absence of LCF. When LCF is affected in DDH, the patients are more likely to exhibit symptoms related to other ligaments or musculature. Although some studies reported variations in the femoral-pelvic angulation, these patients did not seem to have actual symptoms or impairments in their daily activities.

CONCLUSION

As the existing research performed on LCF is limited, drawing definitive conclusions regarding its function and purpose remains challenging. The biggest issue was the lack of patient history and explanation regarding the time of injury among the patients used in the studies. Additionally, providing more information about how the different patients experienced pain or general problems was limited. Based on the available research and the articles used, only a tentative interpretation is possible, and this will be performed. However, to establish with greater certainty what LCF's function and purpose are, more specific research is required. Greater confidence in the conclusions made in this article will only be possible if findings in future research are consistent with the evidence currently available.

There is an agreement between the articles regarding the embryology of LCF, especially related to the mesenchymal cells and their high importance. As DDH is affecting the mesenchymal cells in the hip, one can expect to see abnormal changes related to both ligaments and bones of the hip in these patients. The components of LCF found in histological methods prove that LCF is a strong ligament with an upgrowth of collagen as the foetus ages, which was used as an argument when discussing LCF's function.

The strength of LCF has been demonstrated under a fully stretched condition, to be capable of withstanding a great deal of force by itself. LCF's functions in coordination with surrounding ligaments and muscles are therefore likely to contribute to hip joint stability, particularly to the placement of the femoral head inside the acetabular fossa. Although LCF seemed to have a limited role in generating or participating in hip movement, evidence suggests that LCF does appear to have a role in restricting excessive hip joint hypermobility. This includes adduction, abduction, flexion, and extension of the hip. As with most ligaments, whose primary role is to create stabilisation, LCF seem to serve a similar function. Clinical observations discussed in this article indicate that patients who had an absence or a torn LCF, demonstrated greater hip joint mobility compared to individuals who had a healthy LCF intact. Histological studies have already established that LCF is a structurally strong ligament. Consequently, its stabilising function becomes most apparent when it becomes fully stretched.

Beyond its role in restricting hypermobility of the hip joint, LCF contributes to maintaining the femoral head consistent inside the acetabular fossa. Damage to LCF may lead to an instability of the femoral head, likely to increase friction on the surrounding cartilage. In some cases, this may contribute to microinstability of the hip joint. This instability at early stages may exacerbate little or no pain to the patient at first. Even if the patient experiences pain, the pain is not a reliable indicator used to diagnose an LCF tear. The absence or minimal presence of pain can make it difficult for both patients and physicians to recognise and prepare appropriately for the seriousness of the injury. If LCF damage remains undiscovered and untreated, further complications may therefore occur. However, current research has yet to find direct proof, as no articles provided a timestamp for how long an LCF tear injury had occurred and how long the patient was functioning with this injury.

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Despite the aforementioned limitations, it is justifiable to hypothesise that a hip joint microinstability may progress to more severe hip joint instability due to ongoing cartilage stress and friction. Although further research is required to establish sustainable evidence, instability-related issues with hip pain appear to be more frequent among high-level athletes compared to non-athletes. This observation supports the notion that LCF plays an important role in hip joint stabilisation while preventing excessive movement that may lead to further damage to the hip joint and the structures around. Athletes challenge the hip joint more and with heavier forces than non-athletes, which may have led to faster and more severe hip joint instability over a shorter time frame.

REFERENCES

1. Brewster S. The development of the ligament of the head of the femur. Clinical Anatomy. 1991;4(4):245–55. doi: 10.1002/ca.980040403.
2. Fritsch H, Hegemann L. Entwicklung des ligamentum capitis femoris und der gleichnamigen Arterie. Z Orthop Ihre Grenzgeb. 1991;129(5):447–52. German. doi: 10.1055/s-2008-1040271.
3. Perumal V, Woodley SJ, Nicholson HD. Ligament of the head of femur: a comprehensive review of its anatomy, embryology, and potential function. Clin Anat. 2016;29(2):247–55. doi: 10.1002/ca.22660.
4. Alexieva A, Krastev D, Traikova-Todorova Z, Albert M. Histological presentation of ligamentum capitis femoris. Varna Medical Forum. 2021;Suppl 1:104–7.
5. Perez-Carro L, Golano P, Vega J, Escajadillo NF, Rubin CG, Cerezal L. The ligamentum capitis femoris: anatomic, magnetic resonance and computed tomography study. Hip Int. 2011;21(3):367–72. doi: 10.5301/HIP.2011.8406.
6. Shinohara Y, Kumai T, Higashiyama I, Hayashi K, Matsuda T, Tanaka Y, Takakura Y. Histological and molecular characterization of the femoral attachment of the human ligamentum capitis femoris. Scandinavian Journal of Medicine & Science in Sports. 2014;24(4):e245–e253. doi: 10.1111/sms.12155.
7. Ceynowa M, Rocławski M, Pankowski R, Mazurek T. The position and morphometry of the fovea capitis femoris in computed tomography of the hip. Surgical and Radiologic Anatomy. 2019;41(1):101–107. doi: 10.1007/s00276 018 2097 y.
8. Umamaheswaran D, Chigurupati N, Solomon P, Rema Devi. Unilateral absence of round ligament of femur – cadaveric case report. Journal of the Anatomical Society of India. 2022;71(2):151–153. doi:1 0.4103/jasi.jasi_210_21.
9. Li T, Zhang M, Wang H, Wang Y. Absence of ligamentum teres in developmental dysplasia of the hip. Journal of Pediatric Orthopaedics. 201535(7):708–711. doi: 10.1097/BPO.0000000000000349.
10. Cerezal L, Kassarjian A, Canga A, Dobado MC, Montero JA, Llopis E, Rolón A, Pérez Carro L. Anatomy, biomechanics, imaging, and management of ligamentum teres injuries. RadioGraphics. 2010;30(6):1637–1651. doi: 10.1148/rg.306105516.
11. Arkhipov SV, Zagorodny NV, Skvortsov DV. Ligamentum capitis femoris: a pilot experimental study. American Journal of Biomedical Science & Research. 2019;5(2):92–94. doi: 10.34297/AJBSR.2019.05.000884.
12. Cerezal L, Arnaiz J, Canga A, González Martín D, Pérez Carro L. Emerging topics on the hip: ligamentum teres and hip microinstability. European Journal of Radiology. 2012;81(12):3745–3754. doi: 10.1016/j.ejrad.2011.04.001.
13. Botser IB, Martin DE, Stout CE, Domb BG. Tears of the ligamentum teres: prevalence in hip arthroscopy using 2 classification systems. The American Journal of Sports Medicine. 2011;39(Suppl):117S–125S. doi: 10.1177/0363546511413865
14. Shu B, Safran MR. Hip instability: anatomic and clinical considerations of traumatic and atraumatic instability. Clinics in Sports Medicine. 2011;30(2):349–367. doi: 10.1016/j.csm.2010.12.008.
15. de Sa D, Phillips M, Philippon MJ, Letkemann S, Simunovic N, Ayeni OR. Ligamentum teres injuries of the hip: a systematic review examining surgical indications, treatment options, and outcomes. Arthroscopy: The Journal of Arthroscopic & Related Surgery. 2014;30(12):1634–1641. doi: 10.1016/j.arthro.2014.06.007.
16. Baek JH, Chun YS, Rhyu KH, Yoon WK, Cho YJ. Effect of ligamentum teres tear on the development of joint instability and articular cartilage damage: an in vivo rabbit study. Anatomical Science International. 2018;93(2):262–268. doi: 10.1007/s12565 017 0406 x.
17. Jo S, Hooke AW, An KN, Trousdale RT, Sierra RJ. Contribution of the ligamentum teres to hip stability in the presence of an intact capsule: a cadaveric study. Arthroscopy: The Journal of Arthroscopic & Related Surgery. 2018;34(5):1480–1487. doi: 10.1016/j.arthro.2017.12.002.
18. Tan CK, Wong WC. Absence of the ligament of head of femur in the human hip joint. Singapore Medical Journal. 1990;31(4):360–363.

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