Inguinal Endometriosis in a Nulliparous Woman Mimicking an Inguinal Hernia: A Case Report with Literature Review

Fatima M. AlSinan
Abdulelah S. Alsakran
Mohammed S. Foula
Taheen M. Al Omoush
Hassan Al-Bisher

Patient: Female, 33-year-old
Final Diagnosis: Inguinal endometriosis
Symptoms: Groin pain
Medication: —
Clinical Procedure: Exploration of inguinal canal
Specialty: Surgery

Objective: Rare disease
Background: Endometriosis is a common gynecological disorder occurring in around 10% of women of reproductive age. Inguinal endometriosis is a rare condition; however, it should be considered in the differential for inguinal masses in women of reproductive age. Usually, it occurs after implantation of endometrial tissue during previous surgical procedures. Patients with inguinal endometriosis are often multiparous women with a history of previous gynecological or obstetric surgery. It represents a diagnostic dilemma, as it is often misdiagnosed as other inguinal pathologies.

Case Report: Herein, we report a case of a 33-year-old nulliparous woman with left groin pain for 2 years increasing in the severity during menstruation. A physical examination revealed a 1.5-cm left inguinal mass. Ultrasound showed an ill-defined speculated solid hypoechoic left inguinal mass measuring 1.6×1.4 cm. Computed tomography (CT) of the pelvis revealed a left inguinal mass measuring 1.7×1.2 cm, demonstrating central hypo-attenuation with thickening of the round ligament. Exploration of the inguinal region revealed an adherent mass to the round ligament and floor of the canal, which was excised completely with a safety margin. The inguinal canal floor was strengthened using proline mesh. Histopathological examination of the mass confirmed the diagnosis of left inguinal endometriosis.

Conclusions: Inguinal endometriosis is a rare clinical entity mimicking other common inguinal conditions. A high index of suspicion is crucial for its preoperative diagnosis, especially in the presence of an inguinal mass associated with cyclic changes in size and pain severity. Its standard management is surgical excision.

Keywords: Chronic Pain • Endometriosis • Hernia, Inguinal • Menstruation • Parity

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/934564
Background

Endometriosis is a common gynecological disorder, with an estimated incidence of 10% in women of reproductive age [1]. It typically involves intra-pelvic organs and peritoneum, but can also affect any extra-pelvic organs [2]. It commonly occurs after implantation of endometrial tissue during previous pelvic surgical procedures [3].

Inguinal endometriosis is a rare clinical entity that was first reported in 1896 by Cullen. Its incidence is not estimated, as there are only around 50 cases reported in the literature. It represents a diagnostic dilemma as it is often misdiagnosed as other inguinal pathologies such as inguinal hernia, soft tissue tumors, and inguinal lymphadenopathy [3-5]. Most of the reported cases are managed surgically without preoperative imaging or biopsy [6]. Herein, we report a case of left inguinal endometriosis in a virgin nulliparous middle-age woman with no previous gynecological procedures, mimicking an inguinal hernia.

Case Report

A 33-year-old nulliparous woman reported having left groin pain radiating to the left thigh and aggravated by menstruation that lasted for 2 years prior to her presentation. She had regular menstrual cycles and denied any gynecological symptoms suggestive of endometriosis such as dysmenorrhea or dyspareunia. She was otherwise healthy with no previous abdominal or pelvic surgeries or any gynecological interventions. She never received hormonal therapy or contraception and she was not on any regular medications. Upon physical examination, she had a 1.5-cm left inguinal mass, tender on palpation and adherent to the underlying tissue. Ultrasonography of the abdomen and pelvis showed an ill-defined speculated solid hypoechoic left inguinal mass measuring 1.6×1.4 cm in diameter. The uterus and ovaries were within normal limits. Computed tomography (CT) of the pelvis revealed a central hypo-attenuation left inguinal mass measuring 1.7×1.2 cm in diameter and thickening of the left round ligament (Figure 1). There were no other identified lesions, or suspicion for endometriosis, malignancy, or inguinal lymphadenopathy. Based on the presentation, examination, and imaging, left inguinal hernia was one of our differential diagnoses.

The patient underwent left inguinal canal exploration that revealed a 1.5-cm mass adherent to the round ligament and floor of the canal. The mass was excised completely with a 0.5-cm safety margin. The inguinal canal floor was repaired and strengthened with prolene mesh. The patient tolerated the procedure well and was discharged in good condition. The mass was sent for histopathological examination. Macroscopically, the excised mass was 3.5×3×1.5 cm in size, and consisted of fibrous tissue, with a cut section showing hemorrhagic areas. Histopathological examination showed multiple foci of endometrial glands surrounded by endometrial stroma embedded within the fibrous tissue (Figure 2). Postoperatively, the patient was followed up in surgery and gynecology out-patient clinics. She had no recurrences. There was no need for further imaging or postoperative hormonal therapy according to the consultant gynecologist.

Discussion

Endometriosis is characterized by the presence of normal endometrial tissue including glands and stroma at sites other than the uterine cavity. The ovaries are the most commonly affected organ, accounting for 96% of cases. Extra-pelvic endometriosis is much less commonly seen but can involve any organ [2].

Patients with inguinal endometriosis are often multiparous women with a history of previous gynecological or obstetric surgery [7,8]. We performed an extensive review of the English literature using the search terms “inguinal endometriosis”, “groin endometriosis” and/or “extra-pelvic endometriosis” in the title, abstract, and/or keywords of articles indexed in the Medline, Scopus, and Google Scholar databases, which is summarized in Table 1. Only 29 cases of inguinal endometriosis have been reported in nulliparous women similar to our case [3-49].

Patients usually present with a palpable inguinal swelling that is often associated with cyclic pain and change in size. Cyclic...
exacerbation of symptoms is a typical feature for endometriosis that is often missed during the initial assessment [9,10]. A history of dysmenorrhea, dyspareunia, and infertility may also be present, indicating concomitant pelvic endometriosis [10-14]. However, most patients, including this case, have regular menstrual cycles, which can be a misleading point in the clinical assessment [8,9]. Inguinal endometriosis is more common on the right side. This is believed to be associated with the presence of the sigmoid, which places pressure on the left inguinal area, acting as a preventive measure [8]. Our patient had left-sided inguinal endometriosis, which is less common, as only 13 cases in the literature review were reported on the left side [3-49].

Inguinal endometriosis mimics a wide variety of inguinal conditions such as inguinal hernia, hemangioma, lymphadenopathy, and hydrocele of canal of Nuck [3-5]. The preoperative diagnosis of inguinal endometriosis is difficult owing to its rarity and inconclusive imaging findings. In the literature, there is no comparative study assessing the efficacy of different imaging modalities in such cases. On ultrasonography, inguinal endometriosis often shows a hypoechoic unicellular or multilocular cyst that is difficult to distinguish from other inguinal region pathologies such as lymph nodes and simple cysts [5,11,16,50]. CT may not be helpful in confirming the diagnosis of inguinal endometriosis, but it can be used to exclude other possible differentials diagnoses [14,17]. However, it did not confirm the diagnosis of inguinal endometriosis in this case. Magnetic resonance imaging (MRI) is the most specific and sensitive imaging modality for the diagnosis of endometriosis in general. MRI can detect iron particles in the hemosiderin present in the endometrioma, making it a better tool for diagnosing endometriosis than the other modalities [10,16]. The typical appearance of inguinal endometriosis is similar to pelvic endometriosis on MRI, showing high intensity on T1-weighted images and hypointensity on T2-weighted images [17,51]. However, the majority of reported cases in the literature have reported inconclusive MRI results for diagnosing inguinal endometriosis. The MRI findings were commonly atypical and non-specific for endometriosis; therefore, the diagnosis of inguinal endometriosis cannot be established [11]. A case series involving 20 patients diagnosed with inguinal endometriosis showed that the majority of patients have a mixed hyper- and hypointensity of both T1- and T2-weighted images (61.1% and 50%, respectively) [18].

Preoperative fine-needle aspiration cytology (FNAC) is diagnostic for endometriosis [19,20]. However, it is rarely performed, as most patients are treated surgically with a preoperative diagnosis of incarcerated inguinal hernia or other inguinal pathologies. The final diagnosis is confirmed by histopathological examination of the excised mass showing endometrial glands and stroma [8,19]. In our patient, CT findings did not suggest endometriosis, and an inguinal hernia was still one of the differential diagnoses. Therefore, preoperative FNAC was not done, as it could have injured the contents of the hernial sac.

It is common for patients with inguinal endometriosis to have co-existing inguinal hernia or hydrocele of canal of Nuck. The management of both conditions is surgical [5,21,22,52]. The surgical management for inguinal endometriosis requires radical excision to decrease the rate of recurrence [52]. However, most patients are managed surgically before being diagnosed with endometriosis; therefore, the radical surgical resection is not done in most cases without evidence of recurrence on follow-up [3,12,23].

Patients with inguinal endometriosis often have concomitant pelvic endometriosis. It is recommended to refer patients for complete gynecological assessment postoperatively [16,21,22]. Laparoscopic evaluation of pelvic endometriosis in patients with inguinal endometriosis is recommended if there is clinical evidence of pelvic endometriosis such as dysmenorrhea,
Table 1. Clinical data of patients with inguinal endometriosis from published literature.

| No. | Year  | No of reported cases | Age/ parity/ location | Presentation | Duration | Menstrual/ obstetric history | Surgical history |
|-----|-------|----------------------|-----------------------|--------------|----------|-----------------------------|-----------------|
| 1   | 2021  | Swatesutipun V, et al [24] | 1 | 34 Unknown Right | Groin mass with cyclical pain | 2 years | Regular | NA |
| 2   | 2021  | Skarpas AS, et al [25] | 1 | 42 Unknown Right | Groin mass, cyclical pain | 3 years | NA | NA |
| 3   | 2020  | Nigam VK, et al [26] | 1 | 40 Multiparous Right | Painful groin mass, no cyclical change | 1 month | Normal, regular cycle | CS |
| 4   | 2020  | Basnayake O, et al [3] | 1 | 27 Unknown Right | Painful groin mass, no cyclical change | 4 months | Dyspareunia, infertility | no |
| 5   | 2020  | Zihni İ, et al [27] | 1 | 31 Multiparous Right | Painful groin mass, no cyclical change | 1 year | NA | C.S |
| 6   | 2020  | Fujikawa H, et al [4] | 1 | 42 Unknown Right | Groin pain | 1 year | NA | NA |
| 7   | 2019  | Thomas JA, et al [28] | 1 | 23 Unknown Right | Painful groin mass, no cyclical change | 1 year | NA | NA |
| 8   | 2019  | Fong KN, et al [23] | 1 | 41 Multiparous Right | Groin mass, no cyclical change | 1 month | Dyspareunia, infertility | no |
| 9   | 2019  | Azhar E, et al [29] | 1 | 33 Multiparous Right | RLQ pain | 2 days | Endometriosis infertility | Laparoscopic excision of pelvic endometrioma |
| 10  | 2019  | Nagama T, et al [30] | 1 | 41 Unknown Right | Painful groin mass, no cyclical change | 10 years | NA | Right inguinal hernia repair |
| 11  | 2019  | Raviraj S, et al [31] | 1 | 30 Unknown Right | Painful groin mass, cyclical pain | 5 months | Infertility | NA |
| 12  | 2019  | Arakawa T, et al [18] | 20 | Avg. 25-46 Nulliparous 17/20 Multiparous 3/20 Right 13/20 Left 5/20 Bilateral 2/20 | Groin pain 20/20 Groin mass 14/20 Cyclical variation in symptoms in 16/20 | NA | Ovarian endometrioma 11/20 Dysmenorrhea 14/20 | C.S 1/20 Laparotomy 1/20 Laparoscopy 3/20 No past surgical history 15/20 |
Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| Year | No of reported cases | Age/parity/location | Presentation | Duration | Menstrual/obstetric history | Surgical history |
|------|----------------------|---------------------|--------------|----------|-----------------------------|-----------------|
| 13   | 2018                 | Wolfhagen, et al [11]| 9, 28 unknown right | Painful groin mass, no cyclical change | 1 month-2 years | NA, NA                     |
|      |                      |                     | 36 Nulliparous left | Painful groin mass, cyclical pain |          | NA, NA                     |
|      |                      |                     | 43 Unknown Right   | Groin mass, no cyclical change |          | NA, NA                     |
|      |                      |                     | 27 Nulliparous Right| Groin mass, no cyclical change |          | NA, NA                     |
|      |                      |                     | 30 Nulliparous Right| Groin mass, no cyclical change |          | NA, NA                     |
|      |                      |                     | 32 Nulliparous Left | Painful groin mass, cyclical pain |          | Dysmenorrhea, dyspareunia, no |
|      |                      |                     | 29 Multiparous Right| Painful groin mass, cyclical pain |          | NA, CS                      |
|      |                      |                     | 36 Unknown Right   | Painful groin mass, cyclical pain |          | NA, NA                     |
|      |                      |                     | 32 Unknown Right   | Painful groin mass, cyclical pain |          | NA, NA                     |
| 14   | 2017                 | Ion D, et al [32]   | 1, 42 Nulliparous right | Painful groin mass, cyclical change in size and pain | 3 months | Infertility, NA             |
| 15   | 2017                 | Okoshi K, et al [12]| 1, 44 Multiparous Right| Painful groin mass, cyclical pain | NA       | Endometriosis, irregular cycles, laproscopic excision of pelvic endometrioma |
| 16   | 2016                 | Kilic mo, et al [33]| 1, 35 Unknown Right | Painful groin mass, cyclical change in size and pain | 2 years  | Endometriosis, laproscopic excision of pelvic endometrioma |
| 17   | 2016                 | Tsuchie H, et al [34]| 1, 45 Multiparous Right| Painful groin mass, cyclical pain | 1 year   | NA, NA                     |
| 18   | 2015                 | Husain F, et al [7] | 1, 32 Multiparous Right| Painful groin mass, cyclical change in size and pain | 2 years  | NA, CS                      |
| 19   | 2015                 | Pandey D, et al [9] | 1, 39 Multiparous Left | Painful groin mass, cyclical change in size and pain | 6 months | Normal, regular cycle, CS   |
| Year | No of reported cases | Age/parity/location | Presentation | Duration | Menstrual/obstetric history | Surgical history |
|------|----------------------|---------------------|--------------|----------|---------------------------|-----------------|
| 20   | 2014                 | 1                   | 23 Unknown Left | Painful groin mass, nausea, fever and chills | 4 days | NA | no |
| 21   | 2014                 | 1                   | 40 Nulliparous Right | Painful groin mass, cyclical pain | 2 years | Regular, menorrhagia | no |
| 22   | 2014                 | 1                   | 28 Unknown Right | Painful groin mass, cyclical change in size and pain | 1 year | NA | NA |
| 23   | 2013                 | 1                   | 29 Nulliparous Right | Painful groin mass, cyclical change in size | 2 years | Normal, regular cycle | NA |
| 24   | 2013                 | 1                   | 40 Unknown Right | Painful groin mass, cyclical pain | 2 years | NA | Myomectomy |
| 25   | 2013                 | 1                   | 49 Multiparous Left | Painful groin mass, cyclical change in size | 6 months | Normal, regular cycle | CS |
| 26   | 2012                 | 1                   | 36 Unknown Left | Painful groin mass, cyclical change in size and pain | 3 years | Hystrectomy | Hystrectomy |
| 27   | 2011                 | 1                   | 48 Multiparous Right | Painful groin mass, cyclical pain | 8 weeks | Metromenorrhagia | NA |
| 28   | 2009                 | 1                   | 35 Unknown Left | Painful groin mass, no cyclical changes | 6 months | Regular cycle with dysmenorrhea | NA |
| 29   | 2009                 | 3                   | 36 Multiparous Right | Groin mass, gradually enlarging | 1 year | Normal, regular cycle | NA |
|      |                      |                     | 37 Nulliparous Right | Cyclic groin pain | 3 year | Dysmenorrhea | NA |
|      |                      |                     | 41 Multiparous Right | Painful groin mass, no cyclical changes | 4 months | Endometriosis | Bilateral oopherectomy for endometriosis |
| 30   | 2008                 | 1                   | 37 Multiparous Right | Painful groin mass, cyclical pain | 5 years | NA | CS, excision of a similar mass without pathology |
| 31   | 2007                 | 1                   | 37 Unknown Right | Painful groin mass, no cyclical changes | 2 months | NA | NA |
Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| No. | Year | Authors | No. of reported cases | Age/parity/location | Presentation | Duration | Menstrual/obstetric history | Surgical history |
|-----|------|---------|-----------------------|---------------------|--------------|----------|----------------------------|-----------------|
| 32  | 2007 | Hagiwara Y, et al [10] | 1 | 28 unknown right | Painful groin mass, cyclical change in size and pain | 7 months | Endometriosis, dysmenorrhea | Laparoscopic left ovarian cystectomy, adhesiolysis for endometriosis |
| 33  | 2007 | Ducarme G, et al [22] | 1 | 28 Multiparous right | Groin mass, cyclical change in size and pain | 6 months | Normal, regular cycle | CS+ hernia repair |
| 34  | 2006 | Ku J, et al [40] | 1 | 46 Multiparous right | Groin and RLQ pain | 2 days | Normal, regular cycle | NA |
| 35  | 2005 | Licheri S, et al [16] | 1 | 29 Nulliparous right | Painful groin mass, cyclical change in size and pain | 1 year | Endometriosis, dysmenorrhea on hormonal therapy | NA |
| 36  | 2005 | Kapan M, et al [41] | 3 | 39 unknown right | Painful groin mass, cyclical change in size | 5 years | NA | NA |
|     |      |          |                       | 42 unknown right | Groin mass, gradually enlarging | 4 years | NA | NA |
|     |      |          |                       | 51 unknown left | Groin mass, no cyclical changes | 7 years | NA | NA |
| 37  | 2002 | Hagiwara Y, et al [17] | 1 | 40 Multiparous right | Painful groin mass, no cyclical changes | 2 years | Endometriosis | Laparoscopy |
| 38  | 2001 | Boggi U, et al [42] | 2 | 35 Multiparous right | Painful mass in labium, cyclical pain | months | NA | CS |
|     |      |          |                       | 30 unknown right | Groin mass, painful groin mass, cyclical pain | 4 months | NA | NA |
| 39  | 2000 | Ling CM, et al [43] | 1 | 46 Multiparous right | Painful RLQ mass, cyclical change in size and pain | 4 months | Regular, dysmenorrhea | no |
| 40  | 1996 | Freed KS, et al [20] | 1 | 45 Multiparous right | Groin mass, no cyclical changes | several years | Normal, regular cycle | NA |
| 41  | 1994 | Goh JT, et al [44] | 1 | 22 Unknown Right | Painful groin mass, cyclical change in size and pain | 2 years | Normal, regular cycle | NA |
| 42  | 1994 | Imai A, et al [45] | 1 | 39 Unknown Right | Painful groin mass, cyclical change in size and pain | 1 year | NA | NA |
### Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| Year | No of reported cases | Age/parity/location | Presentation | Duration | Menstrual/obstetric history | Surgical history |
|------|----------------------|---------------------|--------------|----------|---------------------------|-----------------|
| 43   | 1991                 | 1                   | 24 Unknwon Right | Painful groin mass, no cyclical changes | 4 months | NA | NA |
| 44   | 1985                 | 1                   | 24 Multiparous Right | Painful groin mass, no cyclical changes | 3 weeks | Normal, regular cycle | NA |
| 45   | 1983                 | 1                   | 41 Nulliparous Right | Painful groin mass, gradually enlarging | 1 year | Normal, regular cycle | NA |
| 46   | 1978                 | 1                   | 29 Unknwon Right | Painful groin mass, cyclical pain | 4.5 years | Normal, regular cycle | NA |
| 47   | 1956                 | 3                   | 38 Multiparous Right | Painful groin mass, cyclical change in size and pain | 15 years | Normal, regular cycle | Right tubal pregnancy |
|      |                      |                     | 49 Nulliparous Right | Painful groin mass, cyclical change in size and pain | 3 months | Normal, regular cycle | No |
|      |                      |                     | 40 Nulliparous Right | Painful groin mass, cyclical pain | 3-4 years | NA | NA |

| Pre-operative diagnosis | Imaging modalities/ findings/ accuracy | Pre-operative FNAC | Operation | Hernia presence and repair | Follow up/further management |
|-------------------------|---------------------------------------|-------------------|------------|---------------------------|-----------------------------|
| 1                       | Nuck’s canal cyst, US, MRI Groin cystic swelling Inconclusive | NA | Excision of mass | No | NA |
| 2                       | Inguinal hernia NA | NA | Excision of mass | No | NA |
| 3                       | Incarcerated right inguinal hernia f US, CT Incarcerated inguinal hernia Inconclusive | NA | Excision of mass | Yes | NA |
| 4                       | Hydrocele of canal of nuck US Groin cystic swelling Inconclusive | NA | Excision of mass | Na | Asymptomatic OCP |
| 5                       | Inguinal hernia with cystic lesion US Inguinal hernia, Groin cystic swelling Inconclusive | NA | Excision of mass | Yes | Asymptomatic |
| 6                       | Inguinal hernia versus lymphadenopathy US, MRI Groin mass Inconclusive | NA | Excision of mass with wide surgical margin | Yes | Asymptomatic |
| 7                       | Inguinal endometriosis MRI Inguinal endometriosis Diagnostic | NA | Excision of mass | No | NA |
Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| Pre-operative diagnosis                         | Imaging modalities/ findings/ accuracy | Pre-operative FNAC | Operation                                                                 | Hernia presence and repair | Follow up/ further management |
|------------------------------------------------|-----------------------------------------|-------------------|----------------------------------------------------------------------------|----------------------------|-------------------------------|
| 8 Inguinal hernia and abscess                  | NA                                      | NA                | Incision of drainage of the mass with excision of the fibrous wall of the mass | No                         | Asymptomatic                  |
| 9 Ovarian torsion, incarcerated inguinal hernia, endometrioma | CT, MRI Suspected femoral hernia Inconclusive | NA                | Excision of mass and round ligament                                        | Yes                        | Asymptomatic                  |
| 10 NA                                           | MRI Inconclusive                         | NA                | excision of mass                                                           | No                         | Asymptomatic                  |
| 11 Inguinal hernia                              | US Groin cystic swelling, chocolate cyst Not conclusive | NA                | excision of mass                                                           | No                         | NA                            |
| 12 NA                                           | 18/20: US, Inconclusive 13/20: CT, inguinal mass 18/20: MRI | NA                | 6/20 excision of mass and round ligament 3/20 TAH BSO and excision of mass | No                         | 3/20 OCP 1/20 recurrence after 8 m |
| 13 NA                                           | US, MRI Inconclusive                     | NA                | Excision of mass                                                           | Yes                        | Cyclical pain around scar     |
| Inguinal hernia or endometriosis                | US Inguinal hernia versus endometriosis Inconclusive | NA                | Excision of mass                                                           | Yes                        | NA                            |
| Leiomyoma                                       | US, MRI Leiomyoma Inconclusive           | NA                | Excision of mass                                                           | No                         | Irregular menstrual cycle     |
| Inguinal LN or sabecious cyst                   | US Inguinal LN Inconclusive              | Endometriosis     | Excision of mass                                                           | No                         | Asymptomatic                  |
| Cyst of nuck or lymph node                     | US, MRI Inguinal LN versus groin cystic swelling Inconclusive | NA                | Excision of mass                                                           | Yes                        | Endometriosis, infertility    |
| Inguinal hernia                                 | US Inguinal hernia Inconclusive          | NA                | Excision of mass                                                           | Yes                        | NA                            |
| Cyst of nuck                                    | US Groin cystic swelling Inconclusive    | NA                | Excision of mass                                                           | No                         | NA                            |
| Incarcerated inguinal hernia                    | US, MRI Incarcerated inguinal hernia Inconclusive | Inconclusive     | Excision of mass                                                           | No                         | Irregular menstrual cycle     |
| Pre-operative diagnosis | Imaging modalities/findings/accuracy | Pre-operative FNAC | Operation | Hernia presence and repair | Follow up/further management |
|-------------------------|-------------------------------------|-------------------|-----------|---------------------------|----------------------------|
| 14 Inguinal or femoral hernia | NA | NA | Excision of mass and round ligament | yes | Asymptomatic |
| 15 Hydrocele, endometriosis, incarcerated hernia | CT | Groin cystic swelling | Inconclusive | NA | Excision of mass and round ligament | no | Asymptomatic |
| 16 Incarcerated Inguinal Hernia | US, MRI | Groin cystic swelling | Inconclusive | NA | Excision of mass with wide margin | no | Asymptomatic |
| 17 Desmoid Tumor | MRI | Desmoid tumor | Inconclusive | NA | Excision of mass | no | Cyclic pain |
| 18 Incarcerated Incisional Hernia And Endometrioma | MRI | Groin mass | Inconclusive | NA | Excision of mass | no | Asymptomatic |
| 19 Inguinal Endometriosis | US, MRI | Groin mass | Inconclusive | Endometriosis | Excision of mass and round ligament | no | Asymptomatic |
| 20 Inguinal Hernia | US, CT | Groin cystic swelling | Inconclusive | NA | Excision of mass | yes | OCP |
| 21 Hemangioma, AV malformation | US | Groin cystic swelling | Inconclusive | NA | Excision of mass and round ligament | no | Asymptomatic OCP |
| 22 Inguinal hernia, endometriosis | MRI | Inguinal hernia versus inguinal endometriosis | Inconclusive | NA | Excision of mass | NA | Asymptomatic |
| 23 NA | US | Unremarkable | Inconclusive | Inconclusive | Excision of mass | NA | Cyclic pain |
| 24 NA | NA | NA | Excision of mass | NA | Asymptomatic |
| 25 Inguinal hernia, lipoma, neurofibroma, desmoid tumor, primary lymphoma | US | Groin cystic swelling | Inconclusive | NA | Excision of mass | no | Asymptomatic |
| 26 Endometriosis | US | Groin mass | Inconclusive | Endometriosis | Patient refused surgical management | NA | Asymptomatic |
| 27 Endometriosis | US | Unremarkable | Inconclusive | Endometriosis | Excision of mass | no | Asymptomatic |
| 28 Inguinal endometriosis | US, CT | Groin cystic swelling | Inconclusive | Endometriosis | Excision of mass | NA | Laparoscopy OCP |
### Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| Pre-operative diagnosis                                      | Imaging modalities/findings/accuracy | Pre-operative FNAC | Operation | Hernia presence and repair | Follow up/further management |
|--------------------------------------------------------------|--------------------------------------|--------------------|-----------|---------------------------|-----------------------------|
| 29 Inguinal hernia                                           | NA                                   | NA                 | Excision of mass | No | NA                        |
| Inguinal hernia                                              | NA                                   | NA                 | Excision of mass | Yes | NA                        |
| Inguinal hernia                                              | NA                                   | NA                 | Excision of mass | No | NA                        |
| 30 Desmoid tumor                                            | US Groin cystic swelling Inconclusive | inconclusive       | Excision of mass | no | Laparoscopy               |
| 31 Inguinal hernia                                           | US Spigelian hernia Inconclusive      | NA                 | Excision of mass and round ligament | No | Laparoscopy asymptomatic |
| 32 Inguinal hernia, desmoid tumor, hemangioma, endometriosis | CT, MRI Groin mass Inconclusive       | NA                 | Excision of mass and round ligament | No | Asymptomatic              |
| 33 NA                                                       | US, MRI Groin mass Inconclusive       | NA                 | Excision of mass | Yes | Asymptomatic              |
| 34 Irreducible direct inguinal hernia                        | US, CT Strangulated direct inguinal hernia Inconclusive | NA | Excision of mass | No | Asymptomatic |
| 35 Endometriosis of the round ligament                       | US, MRI Endometriosis of round ligament Diagnostic | NA | Excision of mass and round ligament | No | Asymptomatic |
| 36 Inguinal hernia                                           | US Inguinal hernia Inconclusive       | NA                 | Excision of mass and round ligament | NA | Asymptomatic |
| Inguinal hernia                                              | NA                                   | NA                 | Excision of mass and round ligament | Yes | NA                        |
| Inguinal hernia                                              | NA                                   | NA                 | Excision of mass and round ligament | NA | NA                        |
| 37 Inguinal hernia, dermoid tumor, hemangioma                | CT, MRI Groin mass Inconclusive       | NA                 | Excision of mass and round ligament | No | Asymptomatic |
| 38 Extrapelvic endometrosis                                  | US Groin cystic swelling Inconclusive | NA | Excision of lump and heria sac excision | Yes | Asymptomatic |
| 39 NA                                                       | US Groin cystic swelling Inconclusive | NA | Excision of mass | Yes | Asymptomatic |

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Table 1 continued. Clinical data of patients with inguinal endometriosis from published literature.

| Pre-operative diagnosis | Imaging modalities/findings/accuracy | Pre-operative FNAC | Operation | Hernia presence and repair | Follow up/further management |
|-------------------------|-------------------------------------|--------------------|-----------|---------------------------|-----------------------------|
| 40 Endometriosis         | US, CT Groin cystic swelling Inconclusive | Endometriosis      | Excision of mass | No | Laparoscopy |
| 41 Endometriosis         | NA                                  | NA                 | Excision of mass | No | Asymptomatic |
| 42 Endometriosis         | US, MRI Endometriosis Diagnostic    | NA                 | Excision of mass and round ligament | No | Laparoscopy |
| 43 Abscess               | NA                                  | NA                 | Excision of mass | No | NA |
| 44 Right inguinal LN     | US Groin cystic swelling Inconclusive | NA                 | Excision of mass | Yes | Laparoscopy |
| 45 NA                    | NA                                  | NA                 | Excision of mass | Yes | NA |
| 46 NA                    | NA                                  | NA                 | Excision of mass and round ligament | No | Asymptomatic |
| 47 Endometriosis of the canal of nuck | NA | NA | Excision of mass and round ligament | Yes | Asymptomatic |
| Endometriosis of the canal of nuck | NA | NA | Excision of mass | Yes | Asymptomatic |
| NA                      | NA                                  | NA                 | Excision of mass and round ligament | Yes | Asymptomatic |

FNAC – fine-needle aspiration cytology; NA – not available; US – ultrasonography; MRI – magnetic resonant imaging; CT – computed tomography; CS – cesarean section; OCP – oral contraceptive pills; RLQ – right lower quadrant of the abdomen; TAH BSO – total abdominal hysterectomy with bilateral salpingo-oophrectomy; PO – postoperative; LN – lymph node

dyspareunia, or infertility [10,11,19,21]. The use of hormonal therapy for inguinal endometriosis is controversial. Its role is more prominent in patients with concomitant pelvic endometriosis. It is sometimes recommended in patients with inguinal endometriosis as an adjuvant therapy after surgical intervention to decrease the risk of reoccurrence [7,18,19,21]. In our case, the patient did not have any clinical evidence of pelvic endometriosis, so she was only given follow-ups with gynecology without the need for diagnostic laparoscopy and hormonal therapy.

Conclusions

Inguinal endometriosis is a rare clinical entity mimicking other common inguinal conditions. A high index of suspicion is crucial for its preoperative diagnosis, especially in the presence of an inguinal mass associated with cyclic changes in size and pain severity. FNAC is diagnostic but rarely performed. FNAC for a patient in whom there is a high suspicion of inguinal hernia can injure the contents of the hernia sac. Its standard management is surgical excision. Gynecological assessment is needed pre- and postoperatively to exclude the presence of pelvic endometriosis.

Declaration of Figures’ Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.
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