

# Endoscopic Treatment of Recurred External Snapping Hip After Endoscopic Iliotibial Band Release



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**Abstract:** External snapping hip is caused by snapping of the thickening of the posterior portion of the iliotibial band or the anterior border of the gluteus maximus over the greater trochanter. Surgery is considered for patients who are refractory to conservative treatment. The endoscopic release of the iliotibial band or the endoscopic release of the femoral insertion of the gluteus maximus tendon is the most popular technique. There is a recurrence rate of 7-29% after endoscopic surgery. Although recurrence is often painless, revision surgery may be indicated for symptomatic recurrence. In this Technical Note, the technical details of endoscopic treatment of recurrent external snapping hip after endoscopic iliotibial band release. The key to success is adequate release of the iliotibial band, gluteus maximus tendon, and the fibrosis underneath the iliotibial band.

## Introduction

Snapping hip is classified based on the anatomical location of the offending structures into external snapping hip, internal snapping hip (about iliopsoas tendon), posterior snapping hip (about proximal hamstring origin) and snapping hip due to intra-articular causes.<sup>1,2</sup> External snapping hip is caused by snapping of the thickening of the posterior portion of the iliotibial band or the anterior border of the gluteus maximus over the greater trochanter, and it is the most frequently encountered type of snapping hip.<sup>1,3,4</sup> External snapping is usually asymptomatic and may become painful if trochanteric bursitis is present as a result of repeated snapping.<sup>1</sup>

Conservative management, including stretching, physical therapy, activity modification, nonsteroidal anti-inflammatory drugs, and ultrasound-guided injection of steroid into the trochanteric bursa usually provides good symptom relief and is considered the first-line treatment.<sup>1,3</sup> However, external snapping hip related to gluteus maximus contracture does not generally respond to conservative treatment.<sup>4</sup>

Surgery is considered for patient refractory to conservative treatment. Surgical options include release or resection of a portion of the iliotibial band, Z-plasty lengthening of the iliotibial band and gluteus maximus insertion release, which are performed either with open approach or endoscopic approach.<sup>1,3-5</sup> The endoscopic release of the iliotibial band or the endoscopic release of the femoral insertion of the gluteus maximus tendon is the most popular technique.<sup>4,6</sup> Endoscopic techniques, as compared to open surgery, provide fewer complications, lower recurrence rate, and good clinical outcomes.<sup>6</sup> However, there still is a recurrence rate of 7-29%.<sup>2,7</sup> Although recurrence is often painless, revision surgery may be indicated for symptomatic recurrence.<sup>2</sup> The purpose of this Technical Note is to describe the details of endoscopic treatment of a recurrent external snapping hip after endoscopic iliotibial band release. This treatment is indicated for symptomatic recurrence of external snapping hip after endoscopic iliotibial band release. It is contraindicated for asymptomatic recurrence or other causes of hip pain (Table 1).

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**Table 1.** Indications and Contraindications of Endoscopic Treatment of Recurred External Snapping Hip After Endoscopic Iliotibial Band Release

Indications	Contraindications
1. Symptomatic recurrence of external snapping hip after endoscopic iliotibial band release.	1. Asymptomatic recurrence 2. Other causes of hip pain

## Surgical Technique

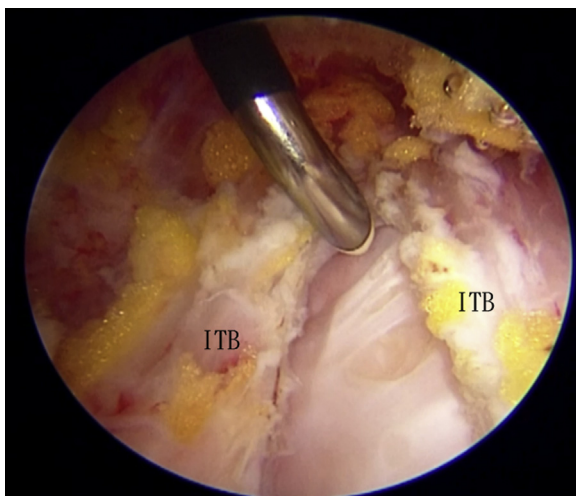
### Preoperative Planning and Patient Positioning

The details of the previous operation should be studied. The diagnosis of recurred external snapping hip is predominantly clinical, but it can be confirmed by ultrasound; high-resolution imaging enables a precise assessment of the anatomic cause of the recurrent snapping during a dynamic examination.<sup>7</sup> Magnetic resonance imaging may be useful for investigation of the causes of recurrence and excludes other causes of hip pain.

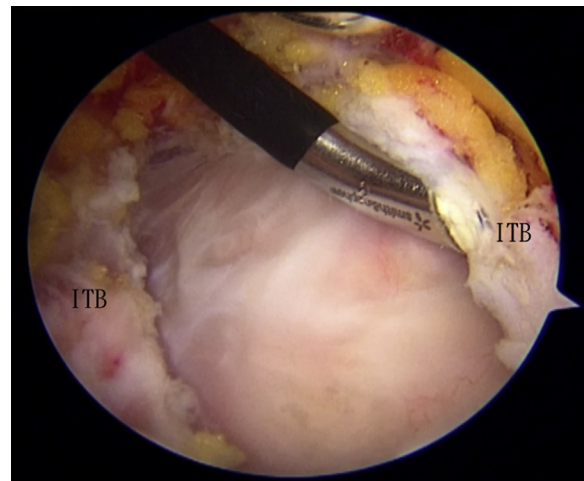
The patient is in the lateral decubitus position. One milligram adrenaline is added to each pack of 3 liters of normal saline for irrigation. Fluid inflow is driven by gravity, an arthro-pump is not used, and a 4.0-mm, 30° arthroscope (Dyonics, Smith & Nephew, Andover, MA) is used for this procedure.

### Portal Placement

The procedure is performed via the proximal and distal portals, which are 3 cm proximal and 3 cm distal to the greater trochanter, respectively, and are aligned



**Fig 1.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal, and the proximal portal is the working portal. The iliotibial is cut longitudinally by an arthroscopic radiofrequency wand. ITB, iliotibial band.



**Fig 2.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal and the proximal portal is the working portal. The anterior half of the iliotibial band is cut transversely by the arthroscopic radiofrequency wand. ITB, iliotibial band.

with the axis of the femur. Five-millimeter skin incisions are made at the portal sites. The subcutaneous tissue between the portal sites is stripped from the iliotibial band by mean of a small periosteal elevator. This forms the initial endoscopic working area.

Intraoperative provocative maneuvers of hip flexion, adduction, and internal/external rotation is performed at different stages of the procedure to try to reproduce snapping for assessment of completeness of release.<sup>1</sup> However, the gluteus maximus and tensor fascia lata muscles may be relaxed by the anesthesia and snapping hip may not be reproducible intraoperatively.<sup>7</sup>

### Longitudinal Cut of Iliotibial Band

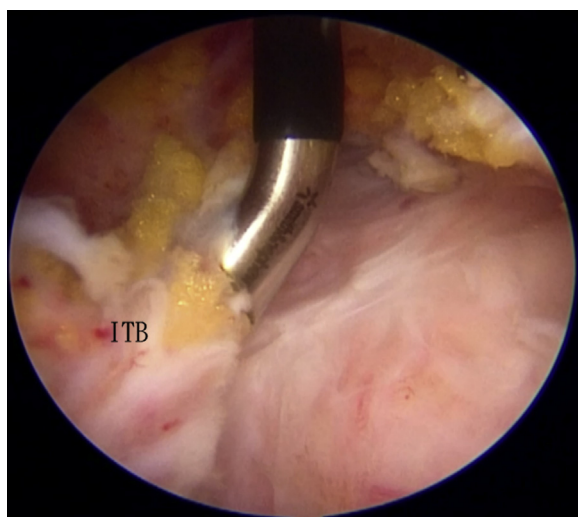
The distal portal is the viewing portal, and the proximal portal is the working portal. The iliotibial band is cut longitudinally by an arthroscopic radiofrequency wand (Smith & Nephew, Andover, MA) (Fig 1).

### Anterior Transverse Cut of Iliotibial Band

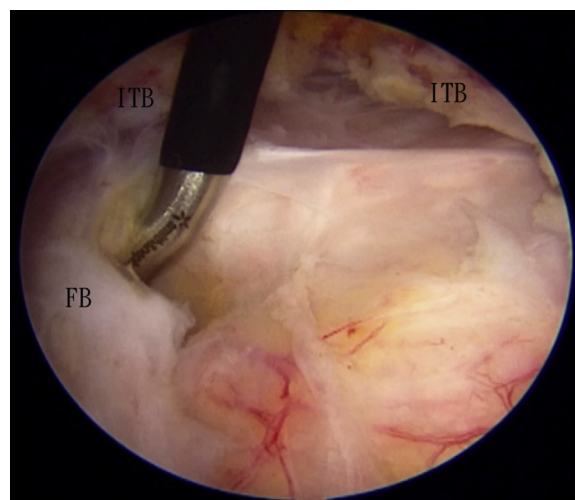
The distal portal is the viewing portal, and the proximal portal is the working portal. The anterior half of the iliotibial band is cut transversely by the arthroscopic radiofrequency wand (Fig 2). The resultant proximal and distal flaps of the band are resected with the wand.

### Posterior Transverse Cut of Iliotibial Band

The distal portal is the viewing portal, and the proximal portal is the working portal. The posterior half of the iliotibial band is cut transversely by the arthroscopic radiofrequency wand (Fig 3). The resultant proximal and distal flaps of the band are resected with the wand.



**Fig 3.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in the lateral decubitus position. The distal portal is the viewing portal, and the proximal portal is the working portal. The posterior half of the iliotibial band is cut transversely by the arthroscopic radiofrequency wand. ITB, iliotibial band.

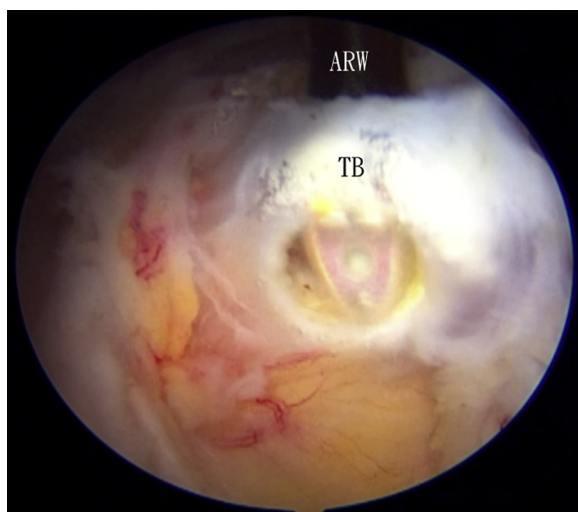


**Fig 5.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal, and the proximal portal is the working portal. After release of the iliotibial band, the underlying fibrous band can be seen extending from the bursa posteriorly to the gluteus maximus tendon. The fibrous band is resected with the arthroscopic radiofrequency wand. FB, fibrous band; ITB, iliotibial band.

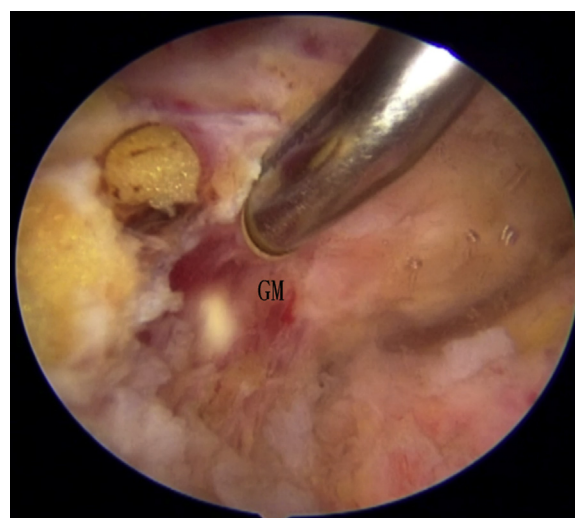
#### Release of Fibrous Band Between Fibrotic Trochanteric Bursa and Gluteus Maximus Tendon

The distal portal is the viewing portal, and the proximal portal is the working portal. After release of the iliotibial band, the underlying fibrotic trochanteric bursa is exposed, and fibrosis with fibrous band can be seen extending from the bursa posteriorly to the gluteus maximus tendon. The bursa and fibrous band are resected with the arthroscopic radiofrequency wand (Figs 4 and 5).

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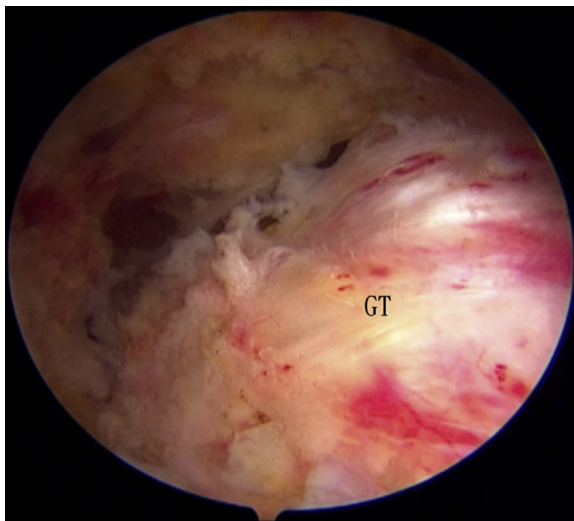


**Fig 4.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal, and the proximal portal is the working portal. After release of the iliotibial band, the underlying fibrotic trochanteric bursa is exposed and is resected with the arthroscopic radiofrequency wand. ARW, arthroscopic radiofrequency wand; TB, trochanteric bursa.



**Fig 6.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal, and the proximal portal is the working portal. The fibrotic gluteus maximus tendon is released with the arthroscopic radiofrequency wand. GM, gluteus maximus.





**Fig 7.** Endoscopic treatment of recurred external snapping hip after endoscopic iliotibial band release of the right hip. The patient is in lateral decubitus position. The distal portal is the viewing portal, and the peritrochanteric region is examined for any residual constricting structures. GT, greater trochanter.

### Release of Gluteus Maximus

The distal portal is the viewing portal, and the proximal portal is the working portal. The fibrotic gluteus maximus tendon is released with the arthroscopic radiofrequency wand (Fig 6). The degree of release is titrated to the disappearance of snapping. The sciatic nerve is close to the gluteus maximus tendon.<sup>5</sup> Electrical discharge from the wand will stimulate the sciatic nerve when it is in close proximity, causing leg muscle twitches. This should be a warning to the surgeon before the actual nerve damage.

Finally, the peritrochanteric region is examined for any residual constricting structures (Fig 7, Video 1, Table 2). Postoperatively, the hip joint is allowed free mobility, and stretching exercises of the gluteus maximus and iliotibial band are performed.

**Table 2.** Pearls and Pitfalls of Arthroscopic Treatment of Endoscopic Treatment of Recurred External Snapping Hip After Endoscopic Iliotibial Band Release

Pearls	Pitfalls
1. Hip abduction releases tension on the iliotibial band and the edges are better identified.	1. Excessive muscle relaxant may intra-operative snapping hip irreproducible.
2. The snapping should be assessed at different times during the procedure.	2. Excessive muscle relaxant may eliminate the leg muscle twitches even the sciatic nerve is stimulated by electric discharge from the arthroscopic radiofrequency wand.

**Table 3.** Advantages and Risks of Endoscopic Treatment of Recurred External Snapping Hip After Endoscopic Iliotibial Band Release

Advantages	Risks
1) Less soft tissue trauma	1) Sciatic nerve injury
2) Less pain	2) Residual gluteal hypotrophy and asymmetry compared to the contralateral side
3) Better cosmetic result	3) Seroma or hematoma formation
4) Less wound complications	4) Incomplete release
5) Earlier mobilization reducing the risk of sacrococcygeal pressure ulcers	5) Recurrence of snapping hip
6) Complete release of constricting structures at the peritrochanteric region	

### Discussion

The pathology responsible for the recurrence of snapping hip may not only be the recurred thickening of the iliotibial band. The fibrous bands involving the gluteus maximus muscle and tendon that is not completely released in previous endoscopic surgery may contribute to the recurrence of the external snapping hip. Moreover, the fibrosis in the layer underneath the iliotibial band as a result of the previous surgery is considered to be another cause of the recurrence of hip snapping.

The most common endoscopic techniques for the treatment of external snapping hip syndrome are diamond-shaped iliotibial band release over the greater trochanter and the release of the femoral insertion of the gluteus maximus tendon.<sup>3,6</sup> This reported technique basically follows the same approaches. Besides endoscopic release of the iliotibial band and gluteus maximus tendon, the fibrous band underneath the iliotibial band is also released. This can ensure no more constricting structure in the peritrochanteric region.

This minimally invasive technique has the advantage of less soft tissue trauma, less pain, better cosmetic result, less wound complications, earlier mobilization, reducing the risk of sacrococcygeal pressure ulcers and complete release of constricting structures at the peritrochanteric region.<sup>4</sup> The potential risks of this technique include sciatic nerve injury, residual gluteal hypotrophy and asymmetry compared to the contralateral side, seroma or hematoma formation, incomplete release and recurrence of snapping hip (Table 3).<sup>6</sup> This is not technically demanding and can be attempted by the averaged hip arthroscopists.

### References

1. Yoon TR, Park KS, Diwanji SR, Seo CY, Seon JK. Clinical results of multiple fibrous band release for the external snapping hip. *J Orthop Sci* 2009;14:405-409.
2. Pierce TP, Kurowicki J, Issa K, Festa A, Scillia AJ, McNerney VK. External snapping hip: A systematic review

- of outcomes following surgical intervention: External snapping hip systematic review. *Hip Int* 2018;28:468-472.
3. Ilizaliturri VM Jr, Martinez-Escalante FA, Chaidez PA, Camacho-Galindo J. Endoscopic iliotibial band release for external snapping hip syndrome. *Arthroscopy* 2006;22:505-510.
  4. Dai Z, Chen Z, Liao Y, Tang Z, Cui J. Comparison of arthroscopic versus open surgery on external snapping hip caused by gluteal muscle contracture. *Hip Int* 2018;28:173-177.
  5. Malinowski K, Kalinowski L, Góralczyk A, Ribas M, Lund B, Hermanowicz K. External snapping hip syndrome endoscopic treatment: "Fan-like" technique as a stepwise, tailor-made solution. *Arthrosc Tech* 2020;9:e1553-e1557.5.
  6. Randelli F, Mazzoleni MG, Fioruzzi A, et al. Surgical interventions for external snapping hip syndrome. *Knee Surg Sports Traumatol Arthrosc* 2021;29:2386-2393.
  7. Coulomb R, Cascales V, Mares O, Bertrand MM, George DA, Kouyoumdjian P. Ultrasound-guided percutaneous iliotibial band release for external coxa saltans. A cadaveric study. *J Ultrasound Med* 2021;40:2213-2217.