The Role of Iliopsoas Fractional Lengthening in Hip Arthroscopy: A Systematic Review

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Background: Arthroscopic iliopsoas fractional lengthening is a surgical option for the treatment of internal snapping hip syndrome after failing conservative management.
Study Design: Systematic review
Methods: A search of PubMed central, MEDLINE, and Scopus databases were performed by two individuals from the date of inception to April 2023 for studies examining arthroscopic iliopsoas fractional lengthening. Inclusion criteria was internal snapping hip syndrome treated with arthroscopy. Sample size, patient reported outcomes, and complications were recorded for 24 selected papers. PRISMA guidelines were followed and registered on PROSPERO (CRD42023427466) prior to initiation.
Results: Thirteen retrospective case series, ten retrospective comparative studies, and one randomized control trial from 2005 to 2022 reported on 1021 patients who received an iliopsoas fractional lengthening. The extracted data included patient satisfaction, visual analogue scale (VAS), the modified Harris hip score (mHHS), and additional outcome measures. All 24 papers reported statistically significant improvements in postoperative patient reported outcome measures (PROM) after primary hip arthroscopy and iliopsoas fractional lengthening. However, none of the comparative studies found a statistical benefit in performing IFL.
Conclusion: The available evidence suggests that iliopsoas fractional lengthening (IFL) can be a safe and effective concomitant procedure for patients with internal snapping hip syndrome undergoing hip arthroscopy. The reviewed studies lack sufficient evidence on the benefits of IFL especially in competitive athletes, patients with FAI and patients with borderline hip dysplasia. In these populations, differentiating between the numerous simultaneous procedures conducted makes drawing conclusions about IFL difficult. Additional research is needed to authenticate these conclusions.

Significance: Over the last five years, the outlook on iliopsoas fractional lengthening has transitioned from strongly positive to uncertain, as recent results indicate insufficient evidence to endorse its use. While the procedure was deemed safe, it did not yield significant improvements in patient outcomes.

Table 1: Recent Studies -Results & Complications

Study Authors (year)	Results and conclusions	Recurrence/complications
Walczak et al. [2017]	A majority of patients (89%) developed IP muscle atrophy after labral level IP tenotomies. The lesser trochanteric IP tenotomies did not develop atrophy of the gluteus maxims (n=1) and vastus lateralis muscles, have chronic IP tendon disruption (n=2), or develop the severity of IP atrophy (n=3).	Iliopsoas tendon tear (n=2), gluteal tendon tear (n=1), lateral femoral cutaneous nerve injury (n=1)
Hartigan et al. [2018]	Patients with an LCEA of less than 25 and associated painful iliopsoas snapping can be treated by central-compartment IFL and have high satisfaction, improvement in PROS, and improved pain scores without significant progression of osteoarthritis.	Revision (n = 4) for traumatic labral retear, no complications
Perets et al. [2018]	All patient-reported outcome (PRO) scores demonstrated significant improvements at latest follow-up (P < .001). Mean satisfaction was 7.9. No patients converted to arthroplasty. Painful snapping was resolved in 55 athletes (91.7%)	Temporary numbness (n=1)
Maldonado et al. [2018]	The IFL group showed comparable results to the control group with respect to PRO improvement.	Revision surgery (n=17 in IFL group) and (n=11 in non-IFL group); conversion to THA (n=4 in IFL group) and (n=7 in non-IFL group)
Perets et al. [2019]	IFL as part of hip arthroscopy for treatment of FAI and labral tears demonstrated similar favorable improvement, complication rates, and secondary surgeries when compared with a control group that did not undergo IFL	Ten hips (17.5%) required secondary arthroscopy. Three hips (5.3%) required total hip arthroplasty. One case (1.8%) had minor postoperative complications
Meghpara et al. [2020]	Both groups experienced significant improvements from pre-surgery to latest follow-up for all recorded patient-reported outcomes (PROs). The 1IPI –PIS –IFL group compared favorably with the 1IPI 1PIS 1IFL group for mHHS (86.0 vs 86.1; P = .53), NAHS (83.0 vs 84.7; P = .40), and HOSSSS (78.1 vs 76.5; P = .87). Additionally, iHOT-12, VAS, patient satisfaction, and rates of achieving the minimal clinically important difference for mHHS, NAHS, and HOS-SSS were similar between groups at the latest follow-up.	Study group (IFL): one hip required revision arthroscopy for labral tear and 2 hips converted to THA. 13 hips will persistent PIS Control group (non-IFL) 1 hip required revision arthroscopy because of residual FAI
Maldonado et al. [2021]	All patients in the study group demonstrated statistically significant improvement from preoperative to latest follow-up in mHHS, NAHS, HOS-SSS, and VAS scores. Fifty-seven (78.1%) patients achieved or exceeded the MCID for mHHS. For HOS-SSS 68.1% met or surpassed the MCID.	Study group 2 secondary arthroscopy and 1 total hip arthroplasty Control group 1 secondary arthroscopy and 1 total hip arthroplasty
Matsuda et al. [2021]	Co-afflicted patients treated without tenotomy have similar successful outcomes to patients with primary FAI.	Co-afflicted patients with iliopsoas pathology treated with tenotomy had poorer outcomes compared with controls with FAI without iliopsoas pathology
Jimenez et al. [2022]	89.5% of athletes who attempted to return to sport in IFL were successful. 76.0% of athletes who attempted to return in the non-IFL were successful. e main finding of the present study was that at minimum 5-year follow-up, competitive athletes who underwent primary hip arthroscopy for FAIS and IFL for painful internal snapping hip demonstrated significant improvement in all recorded PROs.	The IFL group underwent 2 revision arthroscopies The control group underwent 3 revision arthroscopies Control group had higher rates of undergoing femorplasties when compared to the IFL group.

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