Endoscopic Sciatic Neurolysis for Deep Gluteal Space Syndrome

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Location of Study: Rush University Medical Center, Chicago, Illinois, USA

Background: Deep gluteal syndrome (DGS) encompasses a spectrum of pathologies causing symptomatic sciatic nerve compression deep to the gluteus maximus muscle. Endoscopic sciatic neurolysis is an option for management of DGS when conservative treatment fails.

Indications: Endoscopic sciatic neurolysis is indicated for retro-trochanteric pain, sciatica-like burning in the posterior thigh, and sitting discomfort that is reproducible on physical examination after failing conservative management.

Technical Description: The technique presented here introduces a standard endoscopic sciatic neurolysis technique with an accessory posterolateral portal placed distally and in line with the sciatic nerve. Use of a switching stick through an accessory distal posterolateral portal can allow for in-line protection and retraction of the sciatic nerve while it is carefully released from compressive fibrous bands using an arthroscopic shaver. It is important that the accessory portal be placed under direct visualization with caution not to injure the sciatic nerve. An arthroscopic radiofrequency device can be used for hemostasis and further release of fibrous bands. At the end of the procedure, the sciatic nerve should be visualized fully released and freely mobile from the piriformis muscle to the level of the lesser trochanter.

Results: In properly selected patients, the procedure is very successful. In a series of 35 cases, the procedure reduced sitting pain (present in 97% of patients preoperative, 17% of patients postoperative), reduced narcotic use, improved visual analog scale (VAS) pain scores, and improved modified Harris hip scores without major complications.

Discussion: Although rare following hip arthroscopy, postoperative scarring and fibrous bands are a common cause of DGS which can be effectively treated by endoscopic sciatic nerve decompression. Results of endoscopic sciatic neurolysis have thus far been encouraging with improvements in patient reported outcome scores and high rates of satisfaction. However, complications do occur and can result in neurologic deficits. Nevertheless, with careful patient selection and meticulous sciatic nerve dissection, endoscopic sciatic neurolysis for DGS is a safe and effective technique for decompression of fibrous bands and adhesions that can lead to sciatic neuralgia.

Keywords: hip; hip arthroscopy; hip preservation; sciatic neurolysis

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VIDEO TRANSCRIPT

This talk is entitled endoscopic sciatic neurolysis for deep gluteal space syndrome.

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Deep gluteal syndrome (DGS) is broadly defined as compression or entrapment of the sciatic nerve as it courses under the gluteus maximus within the deep gluteal space.[1,4-6] There are several possible sources of compression, the most common being fibrous bands of scar tissue around the sciatic nerve.

The clinical presentation of deep gluteal space syndrome involves posterior hip pain, sitting intolerance, night pain, paresthesias, and burning sensations in the posterior aspect of the thigh and buttock. While several etiologies have been reported, the root cause of DGS is compression or loss of mobility of the sciatic nerve, which is typically freely mobile during hip motion.[2] There may also be a postoperative etiology after hip arthroscopy; Uchida and colleagues estimated the incidence of DGS following hip arthroscopy to be 0.9%.[9]

In this video technique, we present the case of a 42-year-old man with left groin and buttock pain. He underwent hip arthroscopy for femoroacetabular impingement. His groin pain resolved, but buttock pain remained with radiation down the posterior aspect of the thigh and exacerbation with sitting or driving. On physical examination, there was tenderness to palpation and reproduction of symptoms with pressure on the deep gluteal space. There were no focal hamstring findings, and the symptoms were not reproduced with piriformis contraction. His hip impingement had resolved, and lumbar spine magnetic resonance imaging (MRI) was negative for nerve root compression. An MRI of the hip was performed and demonstrated intact hamstring insertions without apparent abnormality of the piriformis muscle-sciatic nerve relationship.

The indications for surgery included retro-trochanteric pain, sciatica-like burning or paresthesias, sitting intolerance, inducement of pain consistent with a chief complaint upon prolonged pressure in the deep gluteal space, failure of conservative treatment, and normal lumbar MRI findings.

For the procedure, the patient is placed in the prone position on a Wilson frame. Three arthroscopic portals are planned. The first is placed in line with the ischial tuberosity and within the gluteal fold. The second is placed 3 finger breaths lateral and also within the gluteal fold. An accessory posterolateral portal is placed distally and in line with the sciatic nerve.

First step of the procedure is to establish the posteromedial portal. Fluoroscopic guidance is used to ensure a proper location relative to the ischial tuberosity. The posterolateral portal is then created with triangulation, and an ischial bursectomy is performed. The hamstring tendons are interrogated and defined. Attention is then turned laterally where the sciatic nerve and posterior cutaneous nerve of the thigh are identified. Initial neurolysis is performed carefully with a conservative arthroscopic shaver. At this point, fibrous bands encasing the sciatic nerve are identified. An arthroscopic scissor is used to develop the plane between the fibrous bands and sciatic nerve.

An arthroscopic radiofrequency device is then used for hemostasis and further release of the fibrous bands. An accessory distal posterolateral portal is created to insert a switching stick to protect the sciatic nerve during final debridement of the compressive fibrous bands.

Finally, the arthroscopic shaver is used to complete the sciatic neurolysis. In this case, the bands originated from the hamstring insertion, and dissection was focused on releasing them medially in a safe location. At the end of the procedure, the sciatic nerve is seen fully released and freely mobile.

To review, key steps of the procedure included establishment of the posteromedial portal with fluoroscopic guidance, triangulation to establish the posterolateral portal, ischial bursectomy and identification of compressive fibrous bands, and creation of an accessory posterolateral portal, an ensuring a freely mobile nerve at the end of the case. Rehabilitation is relatively unrestricted with weightbearing as tolerated, no bracing, and early mobilization.

The results of DGS treatment with endoscopic sciatic neurolysis are uncommonly reported. In the classic series by Martin and colleagues, 35 cases were identified.[7] Similar to the present case, scar bands were found in a majority of patients. Sitting pain improved from 97% of patients to 17% of patients postoperatively; visual analog scale (VAS) scores, modified Harris hip scores (mHHS), and narcotic use similarly improved.

There have been other studies corroborating these results. In a case series of 60 patients with DGS, fibrous scar bands were the primary etiology of sciatic nerve entrapment in 45% of cases.[8] Decompression led to improved VAS and mHHS scores, with good to excellent satisfaction in 88.3% of patients. Ham et al[3] also demonstrated significant improvement in VAS pain and mHHS scores at a mean follow-up of 32 months. In their cohort, good or excellent results were achieved in 87.5% of cases.

Complications of this procedure can occur. In a recent series of 77 cases of isolated endoscopic sciatic neurolysis included in a larger series of 97 cases, 4 permanent nerve injuries were identified. The severity of the injuries was not specified. Injury of the posterior femoral cutaneous nerve was more common than injury to the sciatic nerve itself. Caution should be employed when performing this procedure, particularly for inexperienced arthroscopists, due to the risks of neurologic injury.

Our references can be found here.

Thank you for your time and attention.

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