Sciatic Nerve Injury After Proximal Hamstring Avulsion and Repair

Thomas J. Wilson,*† MD, Robert J. Spinner,† MD, Rohith Mohan,‡ BA, Christopher M. Gibbs,‡ BS, and Aaron J. Krych,‡ MD
Investigation performed at the Mayo Clinic, Rochester, Minnesota, USA

Background: Muscle bellies of the hamstring muscles are intimately associated with the sciatic nerve, putting the sciatic nerve at risk of injury associated with proximal hamstring avulsion. There are few data informing the magnitude of this risk, identifying risk factors for neurologic injury, or determining neurologic outcomes in patients with distal sciatic symptoms after surgery.

Purpose: To characterize the frequency and nature of sciatic nerve injury and distal sciatic nerve–related symptoms after proximal hamstring avulsion and to characterize the influence of surgery on these symptoms.

Study Design: Cohort study; Level of evidence, 3.

Methods: This was a retrospective review of patients with proximal partial or complete hamstring avulsion. The outcome of interest was neurologic symptoms referable to the sciatic nerve distribution below the knee. Neurologic symptoms in operative patients were compared pre- and postoperatively.

Results: The cohort consisted of 162 patients: 67 (41.4%) operative and 95 (58.6%) nonoperative. Sciatic nerve–related symptoms were present in 22 operative and 23 nonoperative patients, for a total of 45 (27.8%) patients (8 [4.9%] motor deficits, 11 [6.8%] sensory deficits, and 36 [22.2%] with neuropathic pain). Among the operative cohort, 3 of 3 (100.0%) patients showed improvement in their motor deficit postoperatively, 3 of 4 (75.0%) patients’ sensory symptoms improved, and 17 of 19 (89.5%) patients had improvement in pain. A new or worsening deficit occurred in 5 (7.5%) patients postoperatively (2 [3.1%] motor deficits, 1 [1.5%] sensory deficit, and 3 [4.5%] with new pain). Predictors of operative intervention included lower age (odds ratio [OR], 0.952; 95% CI, 0.921-0.982; \( P = .001 \)) and complete avulsion (OR, 10.292; 95% CI, 2.526-72.232; \( P < .001 \)). Presence of neurologic deficit was not predictive.

Conclusion: Sciatic nerve–related symptoms after proximal hamstring avulsion are underrecognized. Currently, neurologic symptoms are not considered when determining whether to pursue operative intervention. Given the high likelihood of improvement with surgical treatment, neurologic symptoms should be considered when making a decision regarding operative treatment.

Keywords: hamstring; sciatic nerve; hamstring repair; hamstring avulsion

The hamstring muscle group, consisting of the biceps femoris, semitendinosus, and semimembranosus muscles, originates at the ischial tuberosity (except for the short head of the biceps femoris). The semitendinosus, semimembranosus, and long head of the biceps femoris are innervated by the tibial division of the sciatic nerve, while the short head of the biceps femoris is innervated by the peroneal division of the sciatic nerve. Anatomically, the muscle bellies of the hamstring muscle group are intimately associated with the sciatic nerve.

Hamstring injuries are extremely common among athletes, particularly in sports where rapid acceleration or ballistic movements are required.1,2,6 Such injuries, however, also occur frequently in middle-aged individuals engaged in everyday activities, often as the result of a fall. At the time of the injury, patients often experience acute, sharp pain in the posterior thigh and often sense an audible or palpable pop.5 They often present with difficulty walking, sitting pain, and ecchymosis of the posterior thigh. Surgical repair of hamstring avulsions is associated with good functional outcomes, particularly when the repair occurs acutely.3,6,12,13 The intimate association of the hamstring muscle group and the sciatic nerve means that simultaneous injury to the sciatic nerve can occur. There are case
reports of distal sciatic nerve symptoms that develop both acutely and chronically after hamstring avulsion.\textsuperscript{4,8,10,14,15} It is not clear, however, how frequently injury to the sciatic nerve associated with proximal hamstring avulsion occurs. Furthermore, there is some risk of neurologic injury during surgical repair of proximal hamstring avulsions, particularly to the sciatic nerve and the posterior cutaneous nerve of the thigh.\textsuperscript{9} There are few data informing the magnitude of this risk, identifying risk factors for neurologic injury, or determining neurologic outcomes in patients with distal sciatic symptoms after surgery. The goal of the current study was to characterize the frequency and nature of sciatic nerve injury and distal sciatic nerve–related symptoms after proximal hamstring avulsion and to characterize the neurologic outcomes after surgical repair of proximal hamstring avulsion.

METHODS

Study Design and Patient Selection

This retrospective study was approved by an institutional review board. An institutional medical records computerized database was queried to identify all patients who presented for evaluation of a complete or partial proximal hamstring avulsion. The search queried all medical records within the system from January 1, 2000, until August 1, 2016. The individual medical record for each identified patient was then reviewed to confirm that he or she had a partial or complete proximal hamstring avulsion confirmed on magnetic resonance imaging (MRI).

Variables of Interest

For the patient cohort, the following data were abstracted from the medical record: age at injury, sex, date of the injury, mechanism of the injury, tendons avulsed, partial versus complete avulsion, operative versus nonoperative management, serial neurologic examinations (both pre- and postoperatively in operative patients), the date of the operation, operation performed including whether or not sciatic neurolysis was performed, and surgical incision utilized.

Operational Definitions

The mechanism of injury was then classified by velocity to be low, medium, or high. Low-velocity injuries occurred at walking speed or less, such as a fall from standing; medium-velocity injuries occurred between walking and running speeds; and high-velocity injuries occurred above running speed, such as water skiing accidents. Operative repair was dichotomized to acute or chronic; acute repair was defined as repair 6 weeks or less from the date of injury. A motor deficit was considered to be present when there was objective weakness of tibial or peroneal innervated muscles below the knee. A sensory deficit was considered to be present when there was reduction in sharp sensation to less than 50% of the contralateral leg in the same distribution as subjectively reported by the patient in the distribution of the superficial or deep peroneal or tibial nerves. A pain deficit was considered to be present when the patient complained of pain, paresthesias, or dysesthesias in the distribution of the superficial or deep peroneal or tibial nerves.

Surgical Procedure

The indication for surgery was based on discussion with the patient of current symptoms, future anticipated athletic demands, and severity of the injury. In general, surgical repair was offered in the acute setting for complete tendon avulsion of 2 tendons with retraction greater than 2 cm or complete avulsion of all 3 tendons for patients who desired a return to athletic activities.\textsuperscript{11} In the chronic setting, the surgical indication was based on persistent symptoms and limitation of current function.

Two surgeons performed the proximal hamstring repairs for all the patients included in the study. The surgical procedures were performed in the prone position. Either a gluteal crease incision or longitudinal incision was made, typically based on the amount of retraction of the hamstring tendons, but at the discretion of the operating surgeons. The posterior cutaneous branch was visualized when possible and protected. A sciatic neurolysis was typically performed in cases of preoperative neurologic symptoms or at the discretion of the operating surgeon. When the nerve was adherent to local structures precluding sufficient mobilization to complete the hamstring repair, extensive sciatic neurolysis was performed regardless of preoperative symptoms. The tendons were mobilized and debrided to healthy tissue. The gluteus maximus was then retracted proximally, the ischial footprint was debrided of remaining soft tissue, and 2 to 5 suture anchors (Corkscrew 5.5-mm metal double-loaded suture anchors, Arthrex) were placed. Locking sutures were then passed, and the tendons were tied back to the ischial tuberosity. A postoperative brace with the knee locked in 70° of flexion was worn for 3 weeks in acute cases and 6 weeks in chronic cases.

Nonoperative Management

Nonoperative management consisted of rest and ice with nonsteroidal anti-inflammatory drugs for pain management. Gentle stretching was encouraged. Therapeutic exercise under the guidance of a physical therapist was then recommended with functional strengthening and a gradual return to activities over 4 to 6 weeks. Due to the referral pattern at our institution, most nonoperative management was directed by physiatrists outside of our health system, precluding long-term follow-up in patients managed nonoperatively.

Primary Outcomes

The primary outcomes were neurologic symptoms referable to the sciatic nerve distribution below the knee. For operative patients, neurologic symptoms were compared pre- and postoperatively. A full lower-extremity neurologic examination was documented at the preoperative office visit and at each postoperative office visit. For all patients,
postoperative examinations were documented 1 day and approximately 3 months postoperatively. For patients with preoperative deficits or new or worsening postoperative deficits, a follow-up examination approximately 1 year postoperatively was documented. All new or worsening postoperative deficits were noted, regardless of whether they were transient or permanent. These records were reviewed for the purposes of this study.

Statistical Analysis

Statistical analysis was performed using commercially available software (JMP version 10.0). All bivariate comparisons of categorical data were made using the chi-square test or Fisher exact test, as appropriate. All bivariate comparisons of continuous data were made using the Student t test. Univariate and multivariate logistic regression were used to assess independent association of our variables of interest with our outcomes of interest. We planned a priori to include all variables with \( P < .20 \) in the univariate analysis in subsequent multivariate analyses. Statistical significance was considered to be \( P < .05 \).

RESULTS

Total Patient Cohort

We identified 162 patients who presented for evaluation with MRI confirmation of partial or complete avulsion of the hamstring muscle group (Table 1). There were slightly more females than males (95 females to 67 males) in the cohort. Most patients in the cohort had a complete rather than partial injury (87% vs 13%). The 3 most common mechanisms of injury were a fall, running, and water skiing/snow skiing. Operative management was undertaken for 67 (41%) patients. Distal sciatic nerve (below the knee) symptoms were present in 45 patients (28%). Pain was the most common symptom (22%), followed by sensory (7%) and finally motor symptoms (5%). Among the patients with motor deficits at initial presentation, 5 had peroneal-innervated motor deficits and 3 had deficits of both peroneal and tibial-innervated muscles. No patients had isolated deficits of tibial-innervated muscles.

Determinants of Surgical Management

The operative cohort was compared with the nonoperative cohort (\( n = 95 \)), with significant differences observed between the cohorts with regard to age, complete versus partial avulsion, mechanism of injury, and velocity of injury (Table 2). Patients in the nonoperative cohort were significantly older, were more likely to have partial avulsions, and were more likely to have a fall or low-velocity mechanism of injury. Logistic regression analyses were then performed to examine for predictors of operative intervention (Table 3). In multivariate logistic regression analysis, younger age and a complete avulsion were both predictive of operative repair. For every year of increased age, patients were 0.952 (95% CI, 0.921-0.982) times as

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**TABLE 1**

Demographic Details for Entire Cohort of Patients With Proximal Hamstring Avulsion Injuries

| Total cohort, N | 162 |
|---------------|-----|
| Age, y, mean ± SD | 53.2 ± 13.5 |
| Sex | |
| Male | 67 (41.4) |
| Female | 95 (58.6) |
| Injury | |
| Complete | 141 (87.0) |
| Partial | 21 (13.0) |
| Mechanism of injury (top 3) | |
| Fall | 60 (37.0) |
| Running | 28 (17.3) |
| Water skiing/skiing | 30 (18.5) |
| Velocity of injury | |
| High | 35 (21.6) |
| Medium | 51 (31.5) |
| Low | 76 (46.9) |
| Management | |
| Operative | 67 (41.4) |
| Nonoperative | 95 (58.6) |
| Neurologic deficit | |
| Motor | 8 (4.9) |
| Sensory | 11 (6.8) |
| Pain | 36 (22.2) |
| Any | 45 (27.8) |

*Values are presented as n (%) unless otherwise indicated.

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**TABLE 2**

Comparison of Operative and Nonoperative Cohorts of Patients With Proximal Hamstring Avulsion Injuries

| | Operative, \( n = 67 \) | Nonoperative, \( n = 95 \) | \( P \) Value |
|---|---|---|---|
| Age, y, mean ± SD | 48.3 ± 11.7 | 56.8 ± 13.6 | <.001 |
| Sex | |
| Male | 30 (44.8) | 37 (38.9) | .46 |
| Female | 37 (55.2) | 58 (61.1) | |
| Injury | |
| Complete | 65 (97.0) | 76 (80.0) | .001 |
| Partial | 2 (3.0) | 19 (20.0) | |
| Mechanism of injury | |
| Fall | 17 (25.4) | 43 (45.3) | .03 |
| Running | 11 (16.4) | 17 (17.9) | |
| Water skiing/skiing | 18 (26.9) | 12 (12.6) | |
| Other | 21 (31.3) | 23 (24.2) | |
| Velocity of injury | |
| High | 21 (31.3) | 14 (14.7) | .005 |
| Medium | 24 (35.8) | 27 (28.4) | |
| Low | 22 (32.8) | 54 (56.8) | |
| Neurologic deficit | |
| Motor | 3 (4.5) | 5 (5.3) | .99 |
| Sensory | 4 (6.0) | 7 (7.4) | .73 |
| Pain | 19 (28.4) | 17 (17.9) | .11 |
| Any | 22 (32.8) | 23 (24.2) | .22 |
| Presentation | |
| Acute | 48 (71.6) | 65 (68.4) | .66 |
| Chronic | 19 (28.4) | 30 (31.6) | |

*Values are presented as n (%) unless otherwise indicated.
likely to undergo operative repair, while patients with a complete avulsion were 10.29 (95% CI, 2.52-72.23) times as likely to undergo operative repair. The mechanism of injury and velocity of injury were both significant in predicting operative repair in univariate analysis but lost significance in multivariate analysis.

Operative Cohort

A total of 67 patients underwent surgical repair of their proximal hamstring avulsion. Repair was performed acutely in 35 (52%) patients and 32 (48%) patients in the chronic period. The median time from injury to operation was 151 days (range, 44-2006 days). An incision in the gluteal crease was utilized in 26 (39%) patients, while a longitudinal incision was utilized in 41 (61%) patients. Five repairs (all chronic) required the use of Achilles tendon allograft. Extensive sciatic neurolysis was performed in 50 (75%) cases.

Preoperatively, distal sciatic motor deficits were present in 3 patients (Figure 1). All 3 (100%) patients showed improvement in their motor deficits postoperatively. Median time to noted initial improvement was 87 days (range, 87-118 days). Four patients had sensory deficits preoperatively; 3 of 4 (75%) patients improved postoperatively, while 1 had a stable deficit. Median time to noted initial improvement was 23 days (range, 21-28 days). Pain deficits were present in 19 patients preoperatively; 17 (89%) patients had improvement in pain postoperatively, while 2 had stable symptoms. Median time to noted initial improvement was 44 days (range, 1-98 days). No patients with preoperative deficits had worsening of their deficit postoperatively. Among the 64 patients with no preoperative motor deficits, 2 (3%) developed new motor deficits postoperatively. Since no patients with motor deficits developed a worsening postoperative deficit, the overall rate of new or worsening motor deficits was 3 (2/67). Both patients who developed new motor deficits had improvement at last follow-up but had persistent motor deficits. Among the 63 patients with no preoperative sensory deficits, 1 (2%) patient developed a new postoperative sensory deficit. Since no patients with sensory deficits developed a worsening postoperative deficit, the overall rate of new or worsening sensory deficits was 1 (1/67). This sensory deficit persisted at last follow-up. Among the 48 patients with no preoperative pain deficits, 3 (6%) developed new pain postoperatively. Since no patients with pain deficits developed a worsening postoperative deficit, the overall rate of new or worsening pain deficits was 4 (3/67). Pain in 2 of the 3 patients resolved by last follow-up, and 1 patient had improved but persistent pain. Overall, 5 (7%) patients developed a new or worsening sciatic nerve–related deficit of any kind postoperatively. New or worsening deficits were too rare to meaningfully analyze for risk factors, but demographic details comparing those patients who developed a new or worsening deficit to those who did not are provided in Table 4.
Our findings suggest that sciatic nerve injuries related to proximal hamstring avulsion injuries may be more common than the literature would suggest. At our center, a neurosurgeon is involved in the evaluation and surgical management of these patients. It may be that the more detailed neurological examination performed accounts for the higher incidence of sciatic nerve–related symptoms that we found. Most of the large series on proximal hamstring injury and repair do not report sciatic nerve–related symptoms or outcomes. Haus and colleagues reported 15 consecutive patients with chronic proximal hamstring avulsions who underwent repair, sciatic neurolysis, and sciatic nerve wrapping. Nine of the 15 (60%) patients had preoperative sciatica. Postoperatively, 6 of 9 (67%) patients had good or excellent outcomes, with 4 cases of transient sciatic neurapraxia. Subbu et al reported that 12 of 112 (11%) patients who underwent proximal hamstring repair had what they referred to as local sciatic symptoms postoperatively. It is unclear what these symptoms were, and they did not report a preoperative assessment to know if these were new symptoms.

A number of mechanisms could account for the nerve-related symptoms. The differential would include primary injury, including contusion of the nerve by the avulsed tendon as it retracts at the time of rupture, stretch of the nerve at the time of injury, compression or irritation of the nerve by associated hematoma, and secondary injuries, including entrapment of the nerve by scar formation or injury to the sciatic nerve in the segment exposed by retraction of the hamstring muscle group. It is unclear which, if any, of these mechanisms is/are responsible for injury. Our study did not allow us to determine the specific onset of the symptoms to hone in on the likelihood of primary versus secondary causes. In total, 28% of the patients in our cohort had distal (below the knee) sciatic nerve–related symptoms. Pain was the most common nerve symptom, although almost 5% of patients had weakness and almost 7% of patients had sensory loss. Among the patients with weakness, all patients had weakness of peroneal-innervated muscles, and 3 patients also had tibial nerve–innervated muscle weakness. This suggests a higher propensity for injury of the peroneal division of the sciatic nerve compared with the tibial division.

The decision for operative repair is typically based on the symptoms of the patient, including difficulty with ambulation and sitting pain, the overall health of the patient and ability to tolerate an operation, and the desire of the patient to return to sport or strenuous activity. To this point, sciatic nerve–related symptoms have typically not been considered, but it is unclear whether or not these symptoms should be considered in the decision-making process. The operative group in our study was younger, had more complete avulsions, and was more likely to have a high-rather than low-velocity mechanism of injury. Multivariate logistic regression, however, revealed that the only factors analyzed that were predictive of operative intervention were complete avulsion and younger age. This is consistent with the typical decision-making process used to determine whether to pursue operative repair. Younger patients are probably more likely to desire a return to sport or strenuous activity and typically have fewer medical comorbidities, making them better surgical candidates. Complete avulsion injuries are more likely to be symptomatic, and thus patients are more likely to seek operative repair. Notably, the presence of neurologic symptoms was not predictive of operative repair. The question remains, should the presence of neurologic symptoms be considered when determining the appropriateness of surgical repair? To answer this question requires knowledge of the neurologic outcomes after operative hamstring repair.

The vast majority of preoperative nerve symptoms improved with surgical treatment. No patients had worsening of existing deficits. At our institution, proximal hamstring repair is typically performed as a team, with

### DISCUSSION

Little information is available regarding the neurologic injuries that are associated with proximal hamstring avulsions or about the neurologic outcomes after proximal hamstring repair. The intimate association of the sciatic nerve makes it vulnerable to injury both at the time of the hamstring avulsion and at the time of operative repair. Case reports exist of both sciatic nerve injury secondary to hamstring avulsion and during operative repair, but the true incidence of this complication is unknown. The goal of the current study was to characterize the sciatic nerve injuries from proximal hamstring avulsion and the neurologic outcomes, both related to the sciatic nerve and posterior cutaneous nerve of the thigh, after surgical repair of proximal hamstring avulsions.

Our findings suggest that sciatic nerve injuries related to proximal hamstring avulsion injuries may be more common than the literature would suggest. At our center, a neurosurgeon is involved in the evaluation and surgical management of these patients. It may be that the more detailed neurological examination performed accounts for the higher incidence of sciatic nerve–related symptoms that we found. Most of the large series on proximal hamstring injury and repair do not report sciatic nerve–related symptoms or outcomes. Haus and colleagues reported 15 consecutive patients with chronic proximal hamstring avulsions who underwent repair, sciatic neurolysis, and sciatic nerve wrapping. Nine of the 15 (60%) patients had preoperative sciatica. Postoperatively, 6 of 9 (67%) patients had good or excellent outcomes, with 4 cases of transient sciatic neurapraxia. Subbu et al reported that 12 of 112 (11%) patients who underwent proximal hamstring repair had what they referred to as local sciatic symptoms postoperatively. It is unclear what these symptoms were, and they did not report a preoperative assessment to know if these were new symptoms.

A number of mechanisms could account for the nerve-related symptoms. The differential would include primary injury, including contusion of the nerve by the avulsed tendon as it retracts at the time of rupture, stretch of the nerve at the time of injury, compression or irritation of the nerve by associated hematoma, and secondary injuries, including entrapment of the nerve by scar formation or injury to the sciatic nerve in the segment exposed by retraction of the hamstring muscle group. It is unclear which, if any, of these mechanisms is/are responsible for injury. Our study did not allow us to determine the specific onset of the symptoms to hone in on the likelihood of primary versus secondary causes. In total, 28% of the patients in our cohort had distal (below the knee) sciatic nerve–related symptoms. Pain was the most common nerve symptom, although almost 5% of patients had weakness and almost 7% of patients had sensory loss. Among the patients with weakness, all patients had weakness of peroneal-innervated muscles, and 3 patients also had tibial nerve–innervated muscle weakness. This suggests a higher propensity for injury of the peroneal division of the sciatic nerve compared with the tibial division.

The decision for operative repair is typically based on the symptoms of the patient, including difficulty with ambulation and sitting pain, the overall health of the patient and ability to tolerate an operation, and the desire of the patient to return to sport or strenuous activity. To this point, sciatic nerve–related symptoms have typically not been considered, but it is unclear whether or not these symptoms should be considered in the decision-making process. The operative group in our study was younger, had more complete avulsions, and was more likely to have a high-rather than low-velocity mechanism of injury. Multivariate logistic regression, however, revealed that the only factors analyzed that were predictive of operative intervention were complete avulsion and younger age. This is consistent with the typical decision-making process used to determine whether to pursue operative repair. Younger patients are probably more likely to desire a return to sport or strenuous activity and typically have fewer medical comorbidities, making them better surgical candidates. Complete avulsion injuries are more likely to be symptomatic, and thus patients are more likely to seek operative repair. Notably, the presence of neurologic symptoms was not predictive of operative repair. The question remains, should the presence of neurologic symptoms be considered when determining the appropriateness of surgical repair? To answer this question requires knowledge of the neurologic outcomes after operative hamstring repair.

The vast majority of preoperative nerve symptoms improved with surgical treatment. No patients had worsening of existing deficits. At our institution, proximal hamstring repair is typically performed as a team, with

### Supplementary material

Additional details for the study can be reviewed in the Appendix (Tables A1 and A2).

### TABLE 4

| Comparison of Operative Patients Who Developed a New or Worsening Deficit Postoperatively With Patients Who Did Not Develop a New or Worsening Deficit |
|-----------------------------------------------|
|                              | New/Worsened Deficit, n = 5 | No New Deficit, n = 62 | P Value |
| Age, y, mean ± SD             | 53 ± 8.2                     | 48 ± 12.1              | .35     |
| Sex, n (%)                   |                              |                        |         |
| Male                         | 2 (40.0)                     | 28 (45.2)              | .99     |
| Female                       | 3 (60.0)                     | 34 (54.8)              |         |
| Preoperative deficit, n (%)  | 0 (0.0)                      | 22 (35.5)              | .99     |
| Body mass index, kg/m², mean ± SD | 29.0 ± 8.7          | 27.6 ± 5.4             | .66     |
| Incision, n (%)              |                              |                        | .64     |
| Gluteal crease               | 1 (20.0)                     | 24 (38.7)              |         |
| Longitudinal                 | 4 (80.0)                     | 38 (61.3)              |         |
| Sciatic neurolysis, n (%)    | 3 (60.0)                     | 47 (75.8)              | .59     |
| Operative repair, n (%)      | 5 (100.0)                    | 30 (48.4)              | .06     |
| Acute                        |                              |                        |         |
| Chronic                      | 0 (0.0)                      | 32 (51.6)              |         |
| Time to repair, d, mean ± SD | 23.0 ± 11.5                  | 198.0 ± 394.3          | .33     |
whether to pursue operative hamstring repair, our data demonstrate that these symptoms are likely to improve postoperatively and thus should be included in the discussion of potential benefits. This investigation is the first of its kind to report the rate of postoperative neurologic deficits related to the sciatic nerve. These findings can be used to fully discuss risks and benefits of operative repair with patients.

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### Table A1
Clinical Details for Patients With Sciatic Nerve–Related Symptoms After Proximal Hamstring Avulsion

| Operative Management | Presentation | Operation | Pain | Sensory | Motor | Postoperative | Postoperative | Postoperative |
|----------------------|--------------|-----------|------|---------|-------|---------------|---------------|---------------|
| Acute/Chronic        | Acute        | Sensory   | Motor | Acute/Chronic | Chronic | Pain | Sensory | Motor |
| No                   | Acute        | Tibial    | radiating, electric | SP       | DF 4    | T  | DF 4   | E 4   |
| No                   | Acute        | Peroneal  | painful paresthesias | DP       | T       |   |   |   |
| No                   | Acute        | Tibial    | burning dysesthesia | T        | DF 4    | PF 4 | I 4    |   |
| No                   | Chronic      | Tibial    | radiating, electric | T        | DF 4    | PF 4 | I 4    | DF 4   |
| No                   | Chronic      | SP        |   |   |   |   |   |   |
| No                   | Chronic      | DF        |   |   |   |   |   |   |

(continued)
| Operative Management | Presentation | Pain                        | Operation   | Postoperative Pain | Postoperative Sensory | Postoperative Motor |
|----------------------|--------------|-----------------------------|-------------|--------------------|-----------------------|---------------------|
| Yes                  | Chronic      | Tibial: radiating, electric | Chronic     | Resolved           | Intact                |
| Yes                  | Chronic      | Peroneal: radiating, electric | SP         | Chronic            | Resolved              |
| Yes                  | Chronic      | Peroneal: radiating, electric | PF 5       | Chronic            | Intact                |
| Yes                  | Chronic      | Peroneal: radiating, electric | PF 4       | Chronic            | Resolved              |

*Pain is reported as the distribution of the pain and the character. Sensory symptoms are reported as the distribution of sensory loss/reduction. Motor is reported according to the Medical Research Council grading scale. DF, dorsiflexion; DP, deep peroneal; E, eversion; I, inversion; PF, plantar flexion; SP, superficial peroneal; T, tibial.

### TABLE A2
Clinical Details for Patient With New Sciatic Nerve–Related Symptoms After Operative Proximal Hamstring Repair

| New Postoperative Pain | New Postoperative Sensory Loss | New Postoperative Weakness | Pain at Last Follow-up | Sensory at Last Follow-up | Motor at Last Follow-up |
|------------------------|-------------------------------|---------------------------|------------------------|---------------------------|-------------------------|
| T                      | Peroneal: burning dysesthesia | DF 2                      | PF 4                   | Peroneal: burning dysesthesia | E 1                     |
|                        |                               |                           |                        |                           |                         |
| Tibial: radiating, electric | resolved                    |                           |                        |                           |                         |
| Peroneal: burning dysesthesia | resolved                     |                           |                        |                           |                         |

*Pain is reported by the nerve distribution and character. Sensory is reported as the nerve distribution in which there was sensory loss/reduction. Motor is reported according to the Medical Research Council grading scale. DF, dorsiflexion; E, eversion; PF, plantar flexion; T, tibial.