Successful obturator nerve repairing: Intraoperative sural nerve graft harvesting in endometrium cancer patient

Müge Harmey, Görkse Sel*, Bektas Acikgoz, Mehmet Ibrahim Harmey

*Department of Gynecology and Obstetrics, Bulent Ecevit University, Zonguldac, Turkey
bDepartment of Neurosurgery, Faculty of Medicine, Bulent Ecevit University, Zonguldac, Turkey

ABSTRACT
INTRODUCTION: Intraoperative injury of obturator nerve is a rare complication of gynecologic surgeries, it has been reported especially in patients with endometriosis and genitourinary malignancies. Gynecologic patients undergoing open lymphadenectomy are at increased risk of obturator nerve injury.

PRESENTATION OF CASE: A 60-year-old woman with FIGO stage II grade II endometrial adenocarcinoma underwent bilateral pelvic paraaortic lymphadenectomy. During right obturator lymph node dissection, the right obturator nerve was inadvertently transected with Harmonic scalpel sealing system. The graft was used to anastomose epineurium of distal segment of obturator nerve to its counterpart in the proximal segment with 10–0 prolene suture.

DISCUSSION: In case of iatrogenic nerve transection, microsurgical end-to-end tension-free coaptation is advocated. In case of the obturator nerve is fixed and because of the thermal injury end to end alignment cannot be achieved, nerve grafting is necessary.

CONCLUSION: According to our knowledge, successful immediate grafting of iatrogenically damaged obturator nerve during pelvic lymphadenectomy in our patient is the third report of such a case, but also it has a unique feature of being the first obturator nerve repairing case after dissected with tissue sealing system which causes large sealed area that does not make it possible to make end-to-end anastomosis without nerve harvesting.

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1. Introduction
Intraoperative injury of obturator nerve is a rare complication of gynecologic surgeries, it has been reported especially in patients with endometriosis and genitourinary malignancies.1,2 Gynecologic patients undergoing open lymphadenectomy are at increased risk of obturator nerve injury. Obturator nerve injury related symptoms can vary as motor or sensory, including medial thigh or groin pain, weakness with leg adduction, and sensory loss in the medial thigh of the affected sides.3,4

Obturator nerve injury incidence does not appear to differ between open surgical and laparoscopic approaches.5 The best test for diagnosis of injury is by electromyography.

Endometrial cancer is the most common gynecologic malignancy in women in North America and Europe.6 In the majority of cases, the tumor is confined to the uterus at the time of diagnosis. Early diagnosis is possible due to relatively slow progression of the disease and early manifestation of symptoms. Total extrafascial hysterectomy with bilateral salpingo-oophorectomy with pelvic and paraaortic lymph node dissection is the standard staging procedure for endometrial carcinoma.7

Obturator nerve is a mixed sensory and motor nerve which is formed of L2, L3 and L4 spinal cord roots and innervates cutaneous nerves of medial thigh and leg and also hip and knee joints proprioceptors as well as adductor muscles of thigh. The obturator nerve results from the unification of the rami and descends through the psas muscle to emerge from its medial border at the pelvic brim. It runs over the pelvic brim into the lesser pelvis, curving anteroinferiorly and following the lateral pelvic wall to pass through the obturator foramen.8

In this article we report a successful graft anastomosis of an iatrogenically damaged obturator nerve during pelvic lymphadenectomy of a patient with endometrium cancer.

2. Case
A 60-year-old woman with FIGO stage II grade II endometrial adenocarcinoma underwent bilateral pelvic paraaortic lymphadenectomy. During right obturator lymph node dissection, the right obturator nerve was inadvertently transected with Harmonic scalpel sealing system (Ethicon Endo-Surgery Johnson & Johnson®). Thermal injury was occurred on the nerve endings that effecting at
least 2 cm of the obturator nerve. The distance between cut ends of the obturator nerve was 2 cm. The neurosurgery department was consulted intraoperatively. To achieve a tension-free anastomose nerve grafting was necessary, since 0.5 cm jaw of the Harmonic scalpel sealed the nerve endings primary anastomosis was not possible. Therefore the 3 cm graft was harvested from left sural nerve by exploring the 10 cm proximal to left lateral malleolus and the distal one third part of os Ibula. The graft was used to anastomose epineurium of distal segment of obturator nerve to its counterpart in the proximal segment with 10–0 prolene suture. A graft taken from anterior abdominal wall fascia and Tissel Tissue Glue® was put on the anastomosis to prevent postoperative injuries.

Postoperatively the patient was referred to the physical medicine and rehabilitation department, which revealed right leg strength of 5/5 in flexion, 2/5 in adduction, 5/5 in abduction, 5/5 in knee flex-extension and 5/5 in foot flexion. Deep tendon reflexes remained normal bilaterally. Sensory loss was not examined.

She received 45 Gy external beam radiotherapy and internal beam radiotherapy to pelvis which was started 3 weeks after surgery. She regained her motor power 3 months postoperatively and there was no functional and sensory deficit in the right thigh. At follow up of 6 months the patient had full adduction strength of the right lower extremity. The electromyographic findings at 3 and 6 months were in favor of good regeneration in the right obturator territory. She is at 24th month of follow-up after operation and no sequelae has been observed.

3. Discussion

Irreversible damage of obturator nerve causes paresthesia and major weakness in adduction and atrophy of this group of lower extremity muscles. Because of these complications we recommend primary anastomosis of this nerve and grafting if necessary.

Obturator nerve injury during gynecologic operations may occur by scissors or electrocautery. Immediate repair of this nerve is indicated in all of these irreversible injuries. The nerve graft may be harvested from sural nerve as in our case.

In case of iatrogenic nerve transection, microsurgical end to end tension-free coaptation is advocated. In case of the obturator nerve is fixed and because of the thermal injury end to end alignment cannot be achieved, nerve grafting is necessary as we mentioned above in our patient.

According to our knowledge, successful immediate grafting of iatrogenically damaged obturator nerve during pelvic lymphadenectomy in our patient is the third report of such a case, but also it has a unique feature of being the first obturator nerve repair case after dissected with tissue sealing system which causes large sealed area that does not make it possible to make end-to-end anastomosis without nerve harvesting. Beside our case there have been two cases of intraoperatively grafted obturator nerve injury damaged with scissors reported by Benes for the first time and Ghaemmaghami for the second time.9,10

In gynecologic oncology surgeries, bilateral pelvic lymph node dissection performed in narrow spaces and cautery or Harmonic scalpel need to be used and as in our case thermal injuries to the obturator nerve could be observed. In our experience it was hard to anastomose the cutten ends of the obturator nerve so the sural nerve graft was used. And better outcome was revealed by this technique. Especially while transacting the obturator lymph nodes the obturator nerve injuries can be experienced as in our case the sural nerve grafting and anastomosis of the obturator nerve should take into account for better outcome for patients.

Although our patient received internal and external radiotherapy, the function of the obturator nerve was not affected, and she completely recovered. As in our patient after surgery their treatment may continue with either chemotherapy or radiotherapy and these treatments may affect progression of nerve grafting if it is planned to done after adjuvant therapy, so we recommend not to postpone nerve grafting operation to another time after primary surgery. Immediate repairamento seems to be the more effective way in obturator nerve injuries.

Another point to remember is the importance of the postoperative mobilization of patients, with injured obturator nerve the quality of life deteriorates. Therefore it is another reason of immediate repairament of obturator nerve injury, makes it wise.

Conflict of interest

No conflict of interest.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author’s contributions

Dr. Gorker Sel helped in data collection and writing. Prof. Dr. Muge Harma, Prof. Dr. Bektas Ackoguz and Prof. Dr. Mehmet I. Harma performed the operation

Key learning point

• Not to postpone nerve grafting operation to another time after primary surgery. Immediate repairamento seems to be the more effective way in obturator nerve injuries.

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