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Complications Associated with Cervical Endoscopic Discectomy with the Holmium Laser

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ABSTRACT

Objectives: **Our aim was to determine the rate of surgical complications associated with cervical endoscopic discectomy (CED).** ***Background Data:*** **There are no studies that state the degree of complications after CED.** ***Materials and Methods:*** **Forty-one patients underwent CED with holmium laser.** ***Results:*** **Two out of 41 patients incurred vascular compromise during the procedure. One patient developed recurrent laryngeal nerve damage. One patient developed discitis, and two patients complained of a "clicking" sensation postoperatively.** ***Conclusions:*** **Although CED has a relatively high success rate, there is a 15% rate of complications associated with the procedure. Most of the complications were minor (such as vascular compromise, recurrent laryngeal nerve injury, and postoperative "clicking" sensations), but there was one case of severe discitis, and there is the potential of serious complication from both vascular compromise and neural injury.**

INTRODUCTION

CERVICAL ENDOSCOPIC DISCECTOMY (CED) is a relatively new adjuvant to the treatment of cervical disc disorders. The procedure requires insertion of a portal system into the disc from an anterior approach and thus must bypass the major arteries, veins, and nerves of the neck. This study attempts to delineate the complications associated with CED with the holmium laser. CED has been shown to have success rates ranging from 76%[1] to over 94%,[2] and thus CED is a viable alternative to convention surgery, but little is known of the complication rate associated with the procedure. A study on cervical discograms revealed a complication rate of around 2%,[3] but there are no studies on complications associated with CED.

MATERIALS AND METHODS

Forty-one patients underwent CED for cervical disc disorders. Any complication that occurred at any point in the perioperative period was recorded for this study. Patients were questioned at regular intervals to determine if there were any neural problems after surgery. Specific neural problems checked for included recurrent laryngeal nerve damage, cord damage, nerve root damage, vagal nerve injury, and phrenic nerve damage.

The surgery involves insertion of a special 5-mm sheath system that attempts to avoid injury to the underlying tissues. The sheath has an internal bullet to help dilate the muscular tissues. The sheath and bullet system are inserted over a guide wire at approximately a 30-degree angle to the spine. The carotid and jugular are identified and are moved laterally by manual technique. Once the bullet and sheath are at the level of the disc, the two devices are "tapped" into the disc and then the sheath is removed. Special cutting devices are utilized to cut the disc and bone to help remove loose disc fragments. Finally, a laser and fiberoptic scope are utilized to "smooth" the inner disc and eliminate any residual loose pieces of disc. Once completed, the sheath is removed.

RESULTS

The major complication noted was vessel compromise, which occurred in two patients. In one patient, the vessel compromised was the jugular vein, while in the other it was the carotid artery. In both cases where the vessel was compromised, the inflicting agent was the guide wire prior to sheath insertion. Due to hematoma formation, the case was cancelled. There were no complications from this vessel compromise with the

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guide wire except for a small postoperative hematoma. There was no incidence of spinal cord injury, phrenic nerve injury, or vagal nerve injury. The only neural injury noted was one case of "hoarseness," which probably represented a recurrent laryngeal nerve injury. The patient had full recovery from this recurrent laryngeal nerve injury within 3 months. There were two patients who complained of postoperative "clicking" in their neck. This was not associated with any pain or swallowing difficulty, and possibly represented surgical site soft tissue swelling on the anterior vertebrae near the esophagus. One individual developed discitis and had eventual disc space collapse and auto-fusion of the vertebral bones. The discitis occurred rapidly and was quite aggressive even with antibiotic treatment. No other infections were noted.

DISCUSSION

CED represents a new alternative to the treatment of cervical disc disorders. As with any surgery, there are risks involved, and complications can and do occur. In our experience with 41 such cases, there was a 5% incidence of vessel compromise and a 2.5% incidence of recurrent laryngeal nerve injury. The recurrent laryngeal nerve injury resolved within 3 months and did not affect the patient's eating or phonation habits. Infections occurred in 2.5% of the patients, and the infection noted was discitis. This case of discitis was quite aggressive and resulted in auto-fusion. There was a 5% complaint of a "clicking" sensation without any associated pain, swallowing difficulty, or phonation abnormalities. Of note, prior to this study, our surgeon had already performed over 300 such procedures, and thus this study represents the complications seen by the more experienced surgeon. Earlier patients, who were not in the study, probably had higher incidences due to lower skill levels of their surgeons.

CONCLUSION

Common complications from CED include an incidence of 2.5% discitis, 5% vessel compromise, 2.5% incidence of recurrent laryngeal nerve damage, and a 5% incidence of a "clicking" sensation without pain. Therefore, the overall complication rate from CED is 15%, but only one of the complications (discitis, 2.5%) had long-term consequences. Even though in our experience, vascular compromise and recurrent laryngeal nerve injury did not represent long-term complications, it is quite possible that these complications could be severe and life threatening, especially in less skilled hands. It is also possible that other neurologic injuries could occur. Thus, CED can be a relatively safe procedure, but it does have the potential of having significant risks associated with it that can be life threatening, and thus proper skill and training is warranted.

REFERENCES

1. Knight, M.T., Goswami, A., Patko, J.T. (2001). Cervical percutaneous laser decompression: preliminary results of an ongoing prospective outcome study. J. Clin. Laser Med. Surg. 19, 3–8.
2. Chiu, J.C., Clifford, T.J., Greenspan, M., et al. (2000). Percutaneous microdecompressive endoscopic cervical discectomy with laser thermodiskoplasty. Mt. Sinai J. Med. 67, 278–282.
3. Guyer, R.D., Ohnmeiss, D.D., Mason, S.L., et al. (1997). Complications of cervical discography: findings in a large series. J. Spinal Disord. 10, 95–101.

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1. Chi Heon Kim, Chun Kee Chung, Hyun Jib Kim, Tae Ahn Jahng, Dong Gyu Kim. 2009. Early Outcome of Posterior Cervical Endoscopic Discectomy: An Alternative Treatment Choice for Physically/Socially Active Patients. *Journal of Korean Medical Science* **24**:2, 302. [CrossRef]
2. Sang-Ho Lee , Dr. Yong Ahn , Won-Chul Choi , Arun Bhanot , Song-Woo Shin . 2006. Immediate Pain Improvement Is a Useful Predictor of Long-Term Favorable Outcome after Percutaneous Laser Disc Decompression for Cervical Disc HerniationImmediate Pain Improvement Is a Useful Predictor of Long-Term Favorable Outcome after Percutaneous Laser Disc Decompression for Cervical Disc Herniation. *Photomedicine and Laser Surgery* **24**:4, 508-513. [Abstract] [PDF] [PDF Plus]