

EDITORIAL

Modified endoscopic LASER-assisted DCR without stenting

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Several surgical procedures for approaching the lacrimal sac have been described over the years. It all began with Caldwell¹ who, in 1893, described the first intranasal dacryocystorhinostomy (DCR). In 1904, Totti started draining the lacrimal sac directly into the nasal cavities through the unguis (external approach)². With some modifications over the years, this technique was considered the "golden standard", with consistent results, and over 90% success rates reported in the literature³. Beside these very good success rates, the external approach has the disadvantage of aesthetic impairments; this is why, starting with the first description by McDonogh and Meiring⁴ in 1989, the endoscopic transnasal DCR gained more and more ground. The laser, used endonasally or transcanalicularly, has also been described as a useful tool in endoscopic DCR by a number of authors⁵⁻⁷.

Controversies regarding the surgical technique are cited in the literature. With stents, Yoshitsugu and Rautiainen⁸ reported an increased patency rate, due to the maintenance of the ostium of the lacrimal sac into the middle meatus and the correction of the presacal stenosis.

Allen and Berlin⁹ reported a higher failure rate when using silicone tubing. A suggested reason for this was the presence of granulomatous inflammation in association with silicone intubation. Stenting of the nasolacrimal system is also associated with complications including punctal erosion and slitting of the canaliculi¹⁰.

We described an original technique combining the endoscopic DCR with a LASER-assisted enlargement of the window from the medial wall of the sac without stenting in order to obtain a larger

marsupialization of the sac without bleeding¹¹. The results were compared with other external and endoscopic techniques used for DCR.

To evaluate the outcomes of endoscopic LASER-assisted dacryocystorhinostomy without stenting, a total of 39 patients (41 eyes) with complaints of epiphora and diagnosed with nasolacrimal duct obstruction were included in a prospective study. All the patients had the same preoperative assessment, including radiological and ophthalmologic evaluation, with repeated lacrimal washouts, to confirm the postsacal obstruction.

The surgical technique's goal was to create a wide opening of the medial wall of the sac, using drilling of the frontal process of the maxillary bone and some of the lacrimal bone, incision of the lacrimal sac and the radial vaporisation of the incision margins performed with Diode LASER, in order to create a 0.7 - 1cm opening in the medial wall of the sac. Patients were examined endoscopically, at postoperative intervals of 1 month, 3 months, 6 and 9 months minimum (the follow-up period ranged between 9 to 21 months, average 11.8 months). We obtained a good permeability of the opening of the lacrimal sac in 87.8% of our cases (36 eyes). 5 patients (12.2%) required re-evaluation of the medial sac wall area and re-intervention using different methods. The success criteria were considered the patient's relief of symptoms and the endoscopic visualization of a patent stoma. In conclusions, in the hands of an experienced surgeon, endoscopic LASER-assisted dacryocystorhinostomy without stenting compares favourably with other techniques.

In our group of patients, we used a modified endoscopic DCR procedure, the diode laser being

used transnasally in order to vaporize almost completely the medial wall of the lacrimal sac, creating a large marsupialization (0.7 - 1cm in diameter) of the sac in the nasal fossa. Also, using a diode laser, a good retraction of the vaporized margins was obtained and, due to this phenomenon, a better patency of the new created stoma. This is because the diameter of the ostium created is directly related to the surgical success. In this regard, many authors¹²⁻¹⁴ consider that the removal of the whole bone from the sac is associated with a better index of success. This was confirmed by a study using CT dacryocystography that compared the ostium size in patients who underwent successful and failed DCRs, founding that in 94% of failures the ostium was less than 15mm in diameter, compared to 60% of successful ones¹⁵.

The thermal effect of laser surgery is a well-known problem, depending mostly on the type of laser and the settings used. It is desirable to have strong absorption and short irradiation times, so that the optical energy which is converted to heat upon absorption is confined to a relatively small volume^{16,17}. We did not encounter any complications due to the thermal effect of the diode laser and, in order to avoid overheating, we used the diode laser in single-pulse mode, 12 Watts.

Even if the follow-up time was relatively short (compared to other studies), it was, however, long enough to observe complete healing of tissues. The favourable outcome was judged in terms of patients' subjective relief of symptoms as well as an objective endoscopic visualisation of an ostium into the lacrimal sac.

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