CASE STUDY

Repair of Solitary Internal Jugular Vein After Laryngeal Cancer Recurrence

Reparación de vena yugular interna única después de recurrencia por cáncer de laringe

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Clinical Case

The following is the case of a man aged 61 with a history of smoking and laryngeal papillomatosis. He was treated with multiple endoscopic surgical interventions. Transformation to stage III larynx and neck (T3, N1) cancer was presented and a total laryngectomy was performed with bilateral neck dissection and left internal jugular vein (IJV) ligation. The anatopathological report showed epidermoid carcinoma (1/22 positive left lymph nodes, with extracapsular rupture and 0/22 right). The patient received adjuvant chemotherapy/radiotherapy with 6 cycles of platinum and 5-FU. Level II right neck (3 cm) progression presented at 2 months, with no distant disease, and the patient was sent to the Institute. Tumorectomy was performed, and invasion of the right internal jugular vein was observed (Fig. 1A). Partial resection and reconstruction were performed with a bovine pericardium patch® (REG-SSA #02067C2000 Code: 3440) (Fig. 1B). The patient was discharged 2 days later with no complications, with anticoagulants and without facial oedema or neurological impairment. He died after 2 years due to acute myocardial infarction, with no tumoral activity.

Discussion

IJV progression following dissection of the neck indicates aggressive disease. There is little published evidence of this problem since it is infrequent in tumours in this area. Modified, selective radical neck dissection has led to a downsurg in this problem. When it does occur, however, surgery is the best treatment and the only option for prolonged survival. The dilemma regarding the sacrifice of both IJVs frequently occurs during initial surgery, where the neck is bilaterally affected. Few surgeons accept the morbidity of bilateral sacrifice, frequently leaving the disease to be treated with radiotherapy.1

Although Gius and Grier 2 report correct collateral drainage (oesophageal, pterygoid, occipital, posterior cervical and vertebral veins), there is published evidence on posterior physiological alterations to the ligation of both IJVs, such as the presence of Cushing reflex, characterised...
by systemic arterial hypertension, secondary to raised intracranial pressure, and altered levels of alertness, neurological deficit, blurred vision or respiratory arrest and even syndrome of inappropriate antidiuretic hormone secretion.\textsuperscript{3,4} For the prevention of these complications Eibling et al.\textsuperscript{5} reported on IJV reconstruction with contralateral vein segment with adequate results but they did not report on the oncological results of all patients. Furthermore, different problems were reported where autologous, homologous or heterologous grafts were used. Specifically Ionescu was the first to use glutaraldehyde-preserved bovine pericardium patch for the treatment of valvular anomalies, with adequate tolerance in 212 patients.\textsuperscript{6}

Bovine pericardium usage was controversial in Europe towards the end of the 1990s due to Creutzfeld–Jacobs disease and its variant associated with "mad cow" disease, but in Mexico it has been used in the surgical treatment of post-incisional, inguinal, diaphragmatic hernias previously treated with which glutaraldehyde,\textsuperscript{7} with no associated complications. Its use has also been reported by Boin Ide et al.\textsuperscript{8} for the repair of diaphragmatic defects, with adequate results.

Predictably, sterilisation and decellularisation techniques have improved, and the use of pre-treated bovine pericardium has been extended to different areas, as published by Hellstrom and Reddy.\textsuperscript{9} They report their experience with a cadaveric donor pericardium implant (Tutoplast\textsuperscript{\textregistered}) for correcting penile curvature in 11 patients with Peyronie’s disease, with adequate results. Another urology application involved kidney tumours with inferior vena cava invasion, performing reconstruction in well selected patients.\textsuperscript{10} Glutaraldehyde-preserved bovine pericardium usage for jugular vein reconstruction has not, however, been reported. In the case we present the patient result was good and we therefore consider this a useful instrument in well selected patients, which has been safely used in Mexico.

**Conflict of Interest**

The authors declare no conflict of interest.

**References**