Cervical and Mediastinal Hematoma Caused by a Carotid Injury After Jugular Vein Cannulation, Treated by Stent☆

Hematoma cervical y mediastínico por herida carotídea al canalizar la vena yugular resuelta mediante stent

Central venous catheterization is a very common procedure that is performed on a daily basis in clinical practice. It is used for hemodynamic management and for the administration of drugs that are toxic or irritating to peripheral veins, administration of parenteral nutrition or perioperative fluid management.[1–3] Nonetheless, catheterization may lead to complications, such as arterial puncture (with or without local, cervical or mediastinal hematoma), venous thrombosis, pneumothorax, cardiac arrhythmias, misplaced catheter, air embolism, catheter/guidewire rupture and embolism, and puncture of neighboring structures. These complications are associated any thing such as with the catheter (type of material, caliber), patient (anatomical alterations, coagulopathy), insertion site (internal jugular vein, subclavian vein) or with the technique itself.[1]

We present the case of a patient who developed a cervical-mediastinal hematoma due to iatrogenic injury of the carotid artery. This complication appeared after catheterization of the right internal jugular vein during anesthetic management of liver transplantation and was satisfactorily resolved with the placement of a stent.

The patient is a 52-year-old male with a prior history of type II diabetes mellitus, chronic renal insufficiency due to membranous glomerulonephritis requiring kidney transplantation in September 1995, and diagnosis of liver cirrhosis due to HCV in September 1992. He had been hospitalized on several occasions due to fluid retention and had episodes of upper gastrointestinal bleeding due to esophageal varices, with clinical stage Child–Pugh B and a MELD score of 15 at the time liver transplantation was indicated.

The patient underwent liver transplantation with standard anesthetic management (central venous line, Swan–Ganz, arterial line), with a surgical time of 4 h and the following workup results after surgery: prothrombin time 56%; hemoglobin 8 g/dL; 62 000 platelets. Upon admittance to the ICU, a right-side cervical mass was observed, along with high pressures on the respirator (>33.1 mmHg). Cervical ultrasound demonstrated a large right cervical hematoma and displacement of the trachea toward the left. Cervical-thoracic CT (Fig. 1 A and B) with intravenous contrast detected a large right cervical hematoma and an active bleeding point from the posteromedial wall of the right common carotid artery that was 2.5 cm from the carotid bifurcation. The hematoma extended toward both sides of the neck and toward the posterior mediastinum along its entire length through the retrotracheal space and retropharynx. The diameter of the hematoma in the retrotracheal region was 7–8 cm (transversal) and 4 cm (anteroposterior).

After 2 h of clinical observation and given the progression of the hematoma, selective arteriography was indicated, using the Seldinger technique. This confirmed the origin of the hemorrhage at the right common carotid artery (Fig. 2A), at which time we placed a coated 7 mm ViaBahn stent at the site of the arterial wound. The follow-up radiography series demonstrated the hemostatic effectiveness of the stent (Fig. 2B).

On a follow-up CT on the fourth day after hospitalization (Fig. 1C), no ischemic brain lesions were observed, and the size of the hematoma had diminished in the cervical and thoracic regions. On the fifth day post-op, the patient was able to be extubated. Good oxygen saturation and gas exchange levels were achieved with nasal cannula, and liver function was

Fig. 1 – CT scan: (A) hematoma in the region of C6 with compression of the trachea; (B) hematoma at the T3 level, with the trachea below the orotracheal tube showing reduced diameter due to compression; C) slice at T1 where a decrease in the hematoma can be observed on the 4th day post-op.

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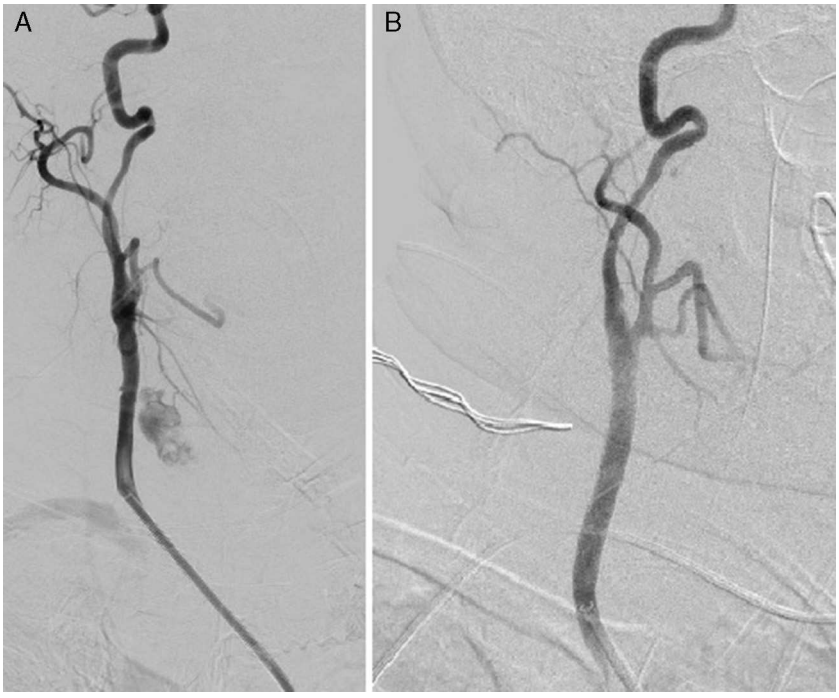

Fig. 2 – Arteriography: (A) active hemorrhage of the right common carotid artery; (B) right common carotid artery with no contrast extravasation after stent placement

normal. The patient was therefore moved to the hospital ward on the following day and discharged from the hospital 20 days after transplantation. The patient is currently asymptomatic and the hematoma has been completely reabsorbed.

The Seldinger technique is habitually used to obtain central venous access. It basically involves the percutaneous insertion of a needle into a blood vessel, followed by the introduction of a guidewire into the blood vessel through the needle and later insertion of the catheter along the guidewire.[4] Classically, the place for insertion of central venous lines has been determined by palpation or visualization of anatomical reference structures that have a known relationship with the vein to be catheterized. In recent years, however, the use of ultrasound-guided vascular punctures has become more widespread. Although several prospective studies[2,3,5–10] have supported the use of ultrasound as a precise technique (higher percentage of insertion on the first attempt) that is quick and useful for preventing complications of central venous catheterization, its use has still not become widespread in clinical practice due to the insufficient number of ultrasound devices and/or the lack of trained professionals, as in our case.

This case report supports the systematic use of ultrasound during central venous cannulation in order to prevent or minimize the appearance of complications associated with the technique.

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Mesh Does not Substitute for a Correct Technique, and Can Turn a Simple Procedure Into a Complex Disease With a Difficult Solution☆

Las mallas no suplen una técnica correcta, y pueden convertir un proceso sencillo en una enfermedad compleja de difícil solución

In the last decade, surgical mesh has become what is considered the ideal method for repairing hernias of any type. As their use has become routine, the surgical process has undergone changes in such a way that the mesh has taken the leading role in the procedure. Meanwhile, other steps that had been consolidated after years of experience and were considered essential for avoiding recurrences have been minimized or even forgotten altogether. These include: clear identification and dissection of the inguinal ligament, pubis and posterior floor; treatment of the sac; assessment of the internal inguinal ring; treatment of the cremaster; assessment of sliding over the pubis; etc.[1–3]

To illustrate this situation, I present the case of a 65-year-old male, with no medical history of interest or risk factors for deficient healing or immune alterations (no obesity, diabetes, aneurysm; non-smoker; no malnutrition; no liver or kidney failure; etc.), who was referred to us after *8 inguinal hernia surgeries and 12 mesh implants* in the abdominal wall. The patient had spent the last 6 years undergoing surgery after surgery, without being able to live a normal life. What started out as a small unilateral inguinal hernia turned into a recurring hernia, chronic seroma, fistula, pubic incisional hernia, infraumbilical incisional hernia and, finally, iliac incisional hernia, as well as an abdominal wall that was fibrous, wood-like, insensitive and deformed (Fig. 1). The patient was monitored until the closure of the skin infection. He was made to walk 1 h per day, and tomographic reconstruction of the abdominal wall was used (defect 10 cm×12 cm on the iliac spine, with intestinal content). After confirming the state of the entire abdominal wall, we operated and found the remains of several surgical mesh implants and cavities. Another 2 whole mesh implants measuring 20 cm had been rejected and located on top of necrotic tissue (one premuscular on the entire midline and another retromuscular on the upper inguinal area); these mesh patches were totally wrinkled and showed no signs of integration (Fig. 2). The implants were removed and the affected tissue

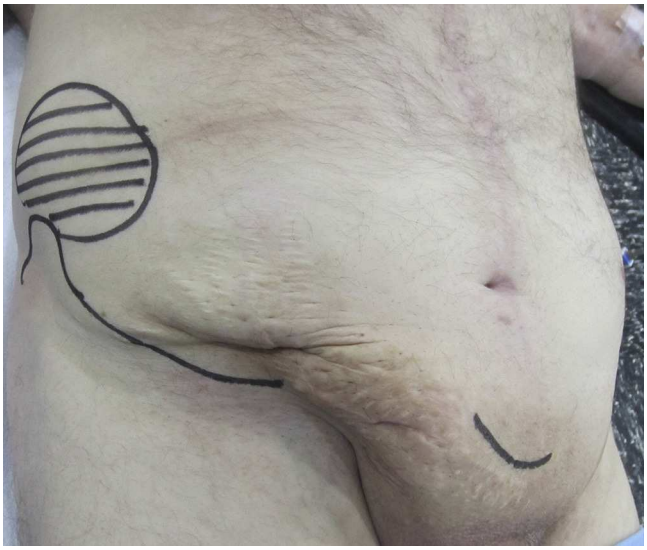

Fig. 1 – Physical examination of the patient; the iliac crest and defect have been outlined; the skin is deformed, thickened and presents trophic alterations.

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