PET/CT allowed the identification of distant metastasis in patients with unexplained CEA rise after curative surgery of colorectal cancer. In a meta-analysis on the diagnostic performance of ^{18}F-FDG PET or PET/CT in patients with elevated CEA serum levels, Lu et al.[10] found a sensitivity and specificity of 94.1% and 77.2%, respectively of ^{18}F-FDG PET/CT in the detection of tumor recurrence.

Diagnosis of penile metastasis is usually performed by biopsy or fine-needle aspiration. Penile metastasis represents a spread from the primary tumor. Non-invasive imaging methods are performed to determine the extent of the disease.[4,6] In the case presented here, penile ultrasound was the first procedure to identify tumor involvement of the penis and the urethra. In addition to penile metastases, ^{18}F-FDG PET/CT scan revealed unknown bone metastatic spread to pelvis, not detected by computerized tomography, but confirmed by magnetic resonance imaging.

Conflict of Interest

They have not received support in the form of scholarships for study.

The information of the manuscript has not been previously presented at a conference.

REFERENCES

1. Bates AW, Baithun SI. Secondary tumors of the penis. J R Soc Med. 2002;95:162–3.
2. Hizli F, Berkmen F. Penile metastasis from other malignancies. A study of ten cases and review of the literature. Urol Int. 2006;76:118–21.
3. Chaux A, Amin M, Cubilla AL, Young RH. Metastatic tumors to the penis: a report of 17 cases and review of the literature. Int J Surg Pathol. 2011;19:597–606.
4. Mearini L, Colella R, Zucchi A, Nunzi E, Porrozzi C, Porena M. A review of penile metastasis. Oncol Rev. 2012;6:80–7.
5. Zhang K, Da J, Yao HJ, Zheng DC, Cai ZK, Jiang YK, et al. Metastatic tumors of the penis. A report of 8 cases and review of the literature. Medicine (Baltimore). 2015;94:e132.
6. Seo HS, Kim ES, Kim S, Im SJ, Park YH, Lee JH, et al. A case of urethral metastasis from sigmoid colon cancer diagnostically and prognostically indicated by ^{18}F-FDG PET/CT. Nucl Med Mol Imaging. 2011;45:319–23.
7. Paquin AJ, Roland SI. Secondary carcinoma of the penis. A review of the literature and a report of nine new cases. Cancer. 1956;9:626–32.
8. NCCN.org [database on the Internet]. New York: National Comprehensive Cancer Network, Inc.; 2015. Available from: http://www.NCCN.org/ [actualized 11.04.15, cited 22.02.16]
9. Giacomobono S, Gallicchio R, Capacchione D, Nardelli A, Gattozzi D, Lettini G, et al. ^{18}F-FDG PET/CT in the assessment of patients with unexplained CEA rise after surgical curative resection for colorectal cancer. Int J Colorectal Dis. 2013;28:1699–705.
10. Lu YY, Chen JH, Chien CR, Chen WT, Tsai SC, Lin WY, et al. Use of FDG-PET or PET/CT to detect recurrent colorectal cancer in patients with elevated CEA: a systematic review and meta-analysis. Int J Colorectal Dis. 2013;28:1039–47.

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Surgical Management of a Complete Section of the Oesophagus During Total Thyroidectomy☆

Tratamiento de una sección completa esofágica ocasionada en el curso de una tiroidectomía total

Oesophageal perforation or division in the course of thyroidectomy is an extremely uncommon but potentially serious complication that requires complex treatment. Only 7 cases have been published to date,[1–6] and none of them reports a circumferential oesophageal lesion, as the case we present.

A 62-year-old woman with no relevant medical history had undergone total thyroidectomy due to multinodular goitre

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with a 3 cm nodule in the left thyroid lobe. No intraoperative incidents or complications were reported by the surgeons. On the first day post-op, the patient presented a bitonal voice and discharge of ingested fluids through the surgical drain. The patient was reoperated on immediately, at which time a complete division of the cervical oesophagus was observed, which was impossible to repair with a primary closure due to the wide separation between the two oesophageal ends. The proximal oesophageal end was then externalized with a drain tube due to the impossibility of performing a cervical oesophagostomy given its short length; the distal oesophageal stump was closed with non-absorbable monofilament sutures, and a feeding jejunostomy was performed.

The patient was sent to our hospital 2 months later, where we completed the study with computed tomography (Fig. 1A), laryngoscopy (which demonstrated paralysis of the left vocal cord) and a swallow test (which confirmed the absence of a cervical oesophagus with a salivary fistula) (Fig. 1B), and the proximal oesophageal end was at least 2 cm from the upper oesophageal sphincter. Surgery was scheduled for oesophageal reconstruction, at which time the proximal oesophageal end was identified 1.5 cm under the cricopharyngeus muscle, while the distal oesophageal end was situated intrathoracically in the upper mediastinum, retracted by intense fibrosis. Its dissection required partial sternotomy, separation of the clavicle and intrathoracic anastomosis. Given these findings, an oesophagectomy was conducted by stripping with retrosternal gastric pull-up reconstruction and manual cervical oesophagogastric anastomosis. The patient's postoperative progress was satisfactory, and one year later she presents correct oral tolerance.

When faced with oesophageal perforation, quick treatment in less than 24 h is of vital importance to avoid mediastinitis. There is a wide spectrum of therapeutic options,[7] including surgical treatment, placement of endoluminal stents, or conservative management with drainage, *nil per os* and antibiotic therapy. In our case, the initial decision was urgent placement of a surgical drain in order to avoid sepsis and ensure patient survival.

For reconstruction of the cervical oesophagus, different possibilities can be contemplated, including: pedicled flaps or free flaps that may be either visceral or fasciocutaneous. The ascension of a tubular gastroplasty or rotational fundoplication requires a single anastomosis in the cervical region.[8] This is the technique of choice when performing oesophagectomy, although the associated morbidity rate is high. Pedicled coloplasty may be a second option when it is not possible to use the stomach. The jejunal free flap is a classic pharyngo-oesophageal reconstruction method requiring 3 gastrointestinal anastomoses and 2 microsurgical vascular anastomoses.[9] There are also other visceral free flaps, such as gastro-omental or colon free flaps, although experience with these is still limited.

Fasciocutaneous flaps, such as the radial free flap of the volar forearm and the anterolateral thigh free flap, are also valid options for pharyngo-oesophageal reconstruction of defects up to 15 cm in length.[10] However, to date there is no evidence on which of the 2 options is the most appropriate. These procedures do not require laparotomy, thereby avoiding associated morbidities. From a strictly theoretical point of view, they would therefore be ideal reconstruction options in short cervical circumferential oesophageal defects.

Undoubtedly, the best treatment for oesophageal lesions that occur during thyroidectomy is prevention through meticulous dissection. But, once they have occurred, cases of fistulas due to partial defects require drainage and conservative treatment.[1–4] However, in circumferential defects, surgery is inevitable. We believe that the reconstruction method should always be selected according to the circumstances of each patient, as well as the surgical experience of the surgeon. In our case, tubular gastroplasty and total oesophagectomy were performed because this option allowed for a single cervical anastomosis, thereby avoiding, to the greatest extent, the lethal consequences of mediastinitis due to anastomotic fistula.

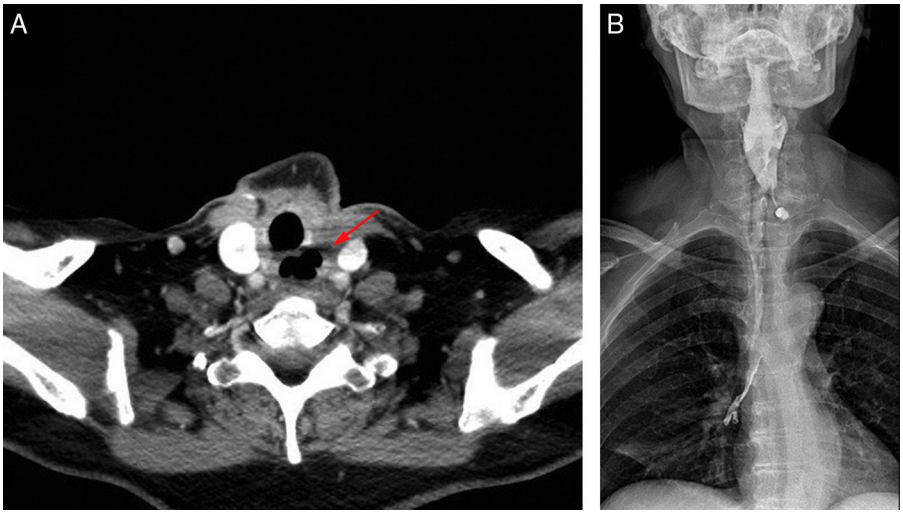

Fig. 1 – (A) Computed tomography: air space corresponding with a cervical oesophageal defect (arrow). (B) Oesophageal videofluoroscopic swallow study showing contrast extravasation through the cervical oesophageal fistula, with no passage to the distal oesophagus, and aspiration of the contrast to both main bronchi.

It is worth mentioning that the gastric pull-up pathway can be performed through the posterior mediastinum, which is more physiological and provides better functional results, but this requires dilation of the pathway after oesophagectomy by stripping with dilators or by inserting gauze. It should also be stated that immediate reconstruction of the oesophagus could have been carried out initially. However, as this complication was unexpected and difficult to manage, the surgeons opted to first resolve the urgent situation and postpone definitive treatment during surgery at a more experienced hospital, which we did not consider to be an incorrect decision.

In conclusion, oesophageal perforation or division is an extremely uncommon but very serious complication in thyroid surgery that requires complex treatment. In partial defects of the oesophagus, we propose a conservative approach using cervical drainage. When the defects are circumferential, and both oesophageal ends remain in the cervical area, oesophageal reconstruction with visceral or fasciocutaneous free flaps from the forearm or thigh are the best options. In cases in which the distal oesophageal end is situated intrathoracically, we propose oesophagectomy by means of stripping and reconstruction with vertical gastroplasty, as in the case of our patient.

REFERENCES

1. Ozer MT, Demirbas S, Harlak A, Ersoz N, Eryilmaz M, Cetiner S. A rare complication after thyroidectomy: perforation of the oesophagus: a case report. Acta Chir Belg. 2009;109:527–30.
2. Conzo G, Stanzione F, Della Pietra C, Palazzo A, Candilio G, Fiorelli A, et al. Tracheal necrosis, oesophageal fistula: Unusual complications of thyroidectomy. Report of two case and literature review. Ann Ital Chir. 2012;83:259–64.
3. Akbulut G, Gunay S, Aren A, Bilge O. A rare complication after thyroidectomy: esophageal perforation. Ulus Travma Derg. 2002;8:250–2.
4. Ward ND, Lee CY, Lee JT, Sloan DA. Esophageal fistula complicating thyroid lobectomy. J Sur Case Rep. 2015;1:1–3.
5. Peng H, Wang SJ, Li W. Rare complication after thyroidectomy-cervical esophageal stenosis: a case report and literature review. World J Surg Oncol. 2014;1:308.
6. Gómez-Ramírez J, Sitges-Serra A, Moreno-Llorente P, Zambudio AR, Ortega-Serrano J, Rodríguez MT, et al. Mortality after thyroid surgery, insignificant or still an issue? Langenbecks Arch Surg. 2015;400:517–22.
7. Eroglu A, Can Kürkçüogu I, Karaoganogu N, Tekinbaş C, Yimaz O, Başog M. Esophageal perforation: the importance of early diagnosis and primary repair. Dis Esophagus. 2004;17:91–4.
8. Ferahkose Z, Bedirli A, Kerem M, Azili C, Sozuer EM, Akin M. Comparison of free jejunal graft with gastric pull-up reconstruction after resection of hypopharyngeal and cervical esophageal carcinoma. Dis Esophagus. 2008;21:340–5.
9. Doki Y, Okada K, Miyata H, Yamasaki M, Fujiwara Y, Takiguchi S, et al. Long-term and short-term evaluation of esophageal reconstruction using the colon or the jejunum in esophageal cancer patients after gastrectomy. Dis Esophagus. 2008;21:132–8.
10. Yu P, Lewin JS, Reece GP, Robb GL. Comparison of clinical and functional outcomes and hospital costs following pharyngoesophageal reconstruction with the anterolateral thigh free flap versus the jejunal flap. Plast Reconstr Surg. 2006;117:968–74.

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