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LETTER TO EDITOR

Selective embolization of the thyroid arteries (SETA): Ten years' experience

Dear Editor,

Selective embolization of the thyroid arteries (SETA) is a relatively new technique, already previously experimented by Chinese authors,¹⁻³ to treat certain thyroid diseases, mainly for correcting hyperfunction and reducing operative bleeding and in patients who are unable or unwilling to undergo surgery or to have radioiodine therapy. Performed as an endovascular procedure, it serves to produce ischemic necrosis of part of the thyroid parenchyma, thereby causing the goiter to diminish in size.

We report our ten years' experience with SETA, from 2007 to 2016. To date, we are the only ones in Italy to have applied this type of treatment, both as an alternative to surgery and as preparation for it.^{4,5}

In our experience SETA was applied to 10 patients with voluminous cervicomedial goiter located deep in the mediastinum, below the horizontal plane passing through the aortic arch. Therefore, they were all subjects who, to be treated surgically, would very likely have required a median sternotomy. We restrict use of the procedure to patients presenting not only voluminous cervicomedial multinodular goiter, but also other diseases making surgery a high-risk option. Six patients categorically refused surgical treatment, six patients had uncontrolled hyperthyroidism, five had chronic obstructive pulmonary disease, five had chronic atrial fibrillation, and two had papillary thyroid carcinoma. In three of them the procedure was followed by thyroidectomy. During selective arteriography, Contour emboli with a 150 mm in diameter (Boston Scientific, Marlborough, MA) were used to embolize the thyroid arteries. Two patients required a second embolization procedure, performed 60 days after the first, due to relapse of the thyroid hyperfunction.

Immediately after the embolization, corticosteroid therapy was started (prednisone 5 mg, thrice daily). The patients were also prescribed prophylactic antibiotic and thyroid-inhibiting (thiamazole, 5 mg, twice daily) treatment to prevent post-embolization thyroiditis that developed in all the SETA-treated patients.

Radiological embolization achieved the desired effects, markedly reducing the goiter size, resolving the compressive symptoms, and normalizing the thyroid function. Nine of the 10 patients had no complications after the procedure. However, one patient developed a complete paralysis of the right hemilarynx, hoarseness due to right true vocal cord paralysis, and swallowing incoordination resulting in a severe episode of "ab ingestis" pneumonia, which was treated in hospital with antibiotics. By six months post-embolization, these complications had been resolved and laryngeal motility was restored. Of the three patients undergoing thyroidectomy, one developed transitory inferior laryngeal nerve palsy. Data of our experience are summarized in [Table 1](#).

In our opinion, SETA can be used in the treatment of cervicomedial goiter as a preoperative procedure or an alternative to thyroid resection. Embolization can be repeated to achieve the therapeutic aims. However, it carries the possibility of severe complications and therefore should not be considered a totally safe and risk-free procedure. However our study shows that, in selected cases, SETA is a valid alternative to thyroidectomy in those patients who cannot or do not want to undergo surgical or radioiodine therapy thus offering a valid solution to a delicate clinical problem.

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Table 1 COPD: chronic obstructive pulmonary disease. CAF: chronic atrial fibrillation. BPM: biventricular pace maker. CHF: chronic heart failure. RLN: recurrent laryngeal nerve. RSTA: right superior thyroid artery. LSTA: left superior thyroid artery. RITA: right inferior thyroid artery. LITA: left inferior thyroid artery.

Case	Indications for embolization	N of procedures	Thyroid arteries embolized	Surgery	Time from embolization to surgery	Complications
1	COPD + Hyperthyroidism	1	LSTA + LITA + RITA	Yes	30 days	No
2	Dyspna + dysphagia + Dilated cardiomyopathy with low cardiac ejection fraction (30%) + recurrent hyperthyroidism + CAF and atrioventricular block treated with BPM + refused surgery	1	All thyroid arteries	No		No
3	Dyspnea + dysphagia + obesity + recurrent hyperthyroidism + refused surgery	2	RITA + LSTA + LITA (second procedure after 6 months) RSTA	No		No
4	COPD + CAF + CHF + Dilated cardiomyopathy with low cardiac ejection fraction (30%) + recurrent hyperthyroidism	1	LITA + RITA + RSTA	No		Paralysis of the right hemilarynx + right true vocal cord paralysis + severe aspiration pneumonia
5	COPD + CAF + Cancer	1	All thyroid arteries	Yes	30 days	Transitory left RLN palsy
6	COPD + cancer	1	All thyroid arteries	Yes	60 days	No
7	Hyperthyroidism + Obesity + dyspnea + refused surgery	2	LITA + LSTA + RITA (second procedure after 1 year) RSTA	No		No
8	CAF + Refused surgery	1	All thyroid arteries	No		No
9	COPD + CAF + dysphagia + refused surgery	1	LITA + RSTA + RITA	No		No
10	Hyperthyroidism + refused surgery	1	All thyroid arteries	No		No

Conflicts of interest

All the authors have no potential conflicts of interest to disclose.

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