

Thyroid surgery without drainage: 15 years of clinical experience

D. C. ARIYANAYAGAM, V. NARAYNSINGH, D. BUSBY, K. SIEUNARINE, G. RAJU AND N. JANKEY

Departments of Surgery and Pathology, General Hospital, P.O.S., Trinidad, West Indies

Drainage in thyroid surgery has been a routine but empirical practice with no scientific evidence to support its benefit. The largest series to date of non-drainage in thyroid surgery is presented, comprising 260 patients over a 15-year period. No case selection for non-drainage was employed. Two hundred and fifty-nine cases were not drained and included toxic goitres, and bilateral and redo procedures. There was one thyroid storm and two cases of subcutaneous fluid collection, treated by needle aspiration. No cases of recurrent laryngeal nerve injury, airway obstruction or death were recorded. This study strongly demonstrates the safety of non-drainage in routine thyroid surgery.

Keywords: drains, thyroidectomy.

Fear of bleeding has been an ever-present preoccupation in thyroid surgery. This was best expressed by Samuel D. Gross¹ in 1866 when he wrote:

"Can the thyroid in the state of enlargement be removed? Emphatically experience answers no. Should a surgeon be so foolhardy as to undertake it, every stroke of the knife will be followed by a torrent of blood and lucky it would be for him if his victim lived long enough for him to finish his horrid butchery. No honest and sensible surgeon would ever engage in it."

The modern legacy of this view is the routine use of drainage following thyroidectomy. To date, however, no study has demonstrated the benefit of drainage and in fact major haemorrhage continues to be reported with drains *in situ*²⁻⁴.

Thyroidectomy involves elevation of skin flaps in the plane between the platysma and deep cervical fascia, which is a virtually avascular interphase. Minimal bleeding is encountered on accessing the gland through the midline and the subsequent procedure involves ligation of anatomically well-defined vascular pedicles and finally haemostatically suturing the gland remnant. In fact the major cause of blood loss which cannot be avoided is during the skin incision, but with modern diathermy coagulation near absolute haemostasis can be achieved.

In view of this, we felt that if technically sound surgery was performed and the operative field was dry on closure, drainage in thyroid surgery would not be necessary. Thus, from 1976 we prospectively adopted the policy of routine non-drainage of thyroid surgery and now present our experience.

PATIENTS AND METHODS

In the 15-year period 1976-1990 all thyroidectomies performed by the authors were reviewed. During this time 260

consecutive thyroidectomies were performed and no case selection for non-drainage was exercised.

RESULTS

Table 1 illustrates the pathological diagnosis and Table 2 the types of operation performed. There were 18 reoperations, 5 for carcinoma and 13 for multinodular goitre. Eighty bilateral procedures (31%) were performed.

Drainage was used in only one case. This patient had total thyroidectomy 1 week after lobectomy showed a microscopic tumour at the resection margin (follicular carcinoma). Since haemostasis was considered suboptimal due to persistent

Table 1 Pathological diagnosis

Pathological diagnosis	Diagnosis
Thyrotoxic—Nodular and Diffuse	33
Non-toxic—Multinodular	142
—Diffuse colloid	11
—Adenoma	54
—Carcinoma	11
—Thyroiditis	9
Total	260

Table 2 Type of operation

Type of operation	Number
Unilateral lobectomy	118
Unilateral subtotal lobectomy	56
Bilateral subtotal lobectomy	86
Total	260

Correspondence to: Vijay Naraynsingh FRCS, Department of Surgery, U.W.I. General Hospital, P.O.S., Trinidad, West Indies.

Table 3 Complications

Complications	Number
Thyroid storm	1
Subcutaneous fluid collection	2
Airway obstruction	0
Recurrent laryngeal nerve palsy	0
Deaths	0
Total	3

oozing from oedematous tissues, drainage was judged necessary and used.

The total complication rate is less than 1% (Table 3). The thyroid storm was controlled by intravenous propranolol, and subcutaneous fluid collections in the two cases were evacuated by needle aspiration.

DISCUSSION

At the present time thyroid surgery is performed in a far more controlled environment than it was in Samuel Gross's era. Modern balanced anaesthesia precludes the need to rush surgery. With adequate illumination, exposure and diathermy coagulation, haemostasis can now be achieved to a degree not possible in the past, yet drains continue to be used as a routine.

Two recent studies^{5,6} (50 and 75 cases respectively) failed to prove any benefit with drainage. This series with 259 cases of non-drainage is the largest reported to date and included toxic goitres, malignant tumours and bilateral procedures which were excluded in Kristofferson's⁵ series and reoperations which were excluded from Whilborg's⁶ series. The complication rate of less than 1% clearly establishes the safety of non-drainage for routine thyroid surgery.

It has been argued that the 'dead space' left following thyroidectomy would accumulate fluid and drains are necessary to evacuate it. This belief is reinforced by the clinical experience that post-thyroidectomy drains usually yield fluid. The concept of 'dead space' has been much abused, since following thyroidectomy the surrounding tissues collapse around the gland remnant under atmospheric pressure thus obliterating any space. This is possible since the soft tissues of the neck are pliant and on skin closure the neck never appears to have the fullness as in the pre-

operative state. If a cavity were to remain following removal of thyroid tissue, then, physical laws would mandate that the pressure within the cavity be greater than that on the outside i.e. atmospheric pressure, or that the walls of the cavity be rigid enough to withstand the compression effect of the external atmospheric pressure. In practice both these situations are clearly unrealistic, thus in effect no 'dead space' exists following thyroidectomy.

Drains have been ineffective in evacuating blood following major post-thyroidectomy haemorrhage thus decreasing the potential protection from airway obstruction²⁻⁴. It has been shown that following major postoperative bleeding, clotting occurs and blocks drains⁷ thus rendering them useless when needed most.

We believe the important principles in thyroidectomy to be meticulous haemostasis, adequate display of anatomy and good surgical judgment, since rarely an unusually difficult case may be more safely managed with drainage. There are other benefits of non-drainage; these include less patient discomfort, no additional wound, no additional scar (important in Keloid prone populations), no entry site for infection and some economic advantage. It is therefore not only unnecessary but also undesirable to practise routine drainage in thyroid surgery.

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Paper accepted 17 August 1992