

Original Research Article

Subtotal thyroidectomy under local anaesthesia in a pregnant woman presenting with giant goitre: a report of a case with review of literature.

Abstract:

Thyroid surgery is performed by most surgeons in practice using general anaesthesia. In resource poor developing nations with paucity of anaesthetists, anaesthetic drugs and equipment, it can be done under local anaesthesia with acceptable results. We report a case of a 17 week pregnant woman who presented with giant goitre and respiratory obstructive symptoms. Post-op, she carried the pregnancy to term with safe delivery. She was followed up for two years with no morbidity recorded. Thyroidectomy using local anaesthesia is safe and cost effective and applicable to a wide range of patients, including those who pose a general anaesthetic risk.

Key Words: Giant Goitre, Subtotal Thyroidectomy, Local Anaesthesia.

Introduction:

The incidence of thyroid disease is increasing, predominantly among women (1). An estimated 15 percent of the general population has abnormalities of the anatomy on physical examination and an unknown percentage of these do not complete a diagnostic evaluation (2). It has been suggested that the number of people affected may be twice as many as the undetected cases (3).

The adult thyroid gland comprises a bilobular structure weighing between 15 and 25 mg in the Caucasian and between 7-25mg in African (4). Giant goitre is an enlargement of the thyroid gland not less than 10gm/kilogram body weight (5).

Pregnancy is the state of relative iodine deficiency secondary to an increase to renal loss and transfer of iodine to the developing foetus. In order to compensate, the thyroid gland increases its uptake of iodine from the blood and if this is lacking, cellular hyperplasia and goitre will result (6).

Thyroid disease is the second most common cause of endocrine dysfunction in women of child bearing age (6). Thyroid disorders like hypothyroid 1% of pregnant women (6), with hyperthyroidism affecting

0.2% of pregnant women(7) and 95% of these will have a diagnosis of Graves' disease, an autoimmune disorder associated with circulating immunoglobulin (IgG) antibodies to the thyroid,TSA receptor, which stimulates thyroid hormones production . Thyroid nodules or solitary toxic nodules or adenomas are found in 2% of pregnant women (8) and usually present with hyperthyroidism.

Therapeutic modalities for managing thyroid disorders include use of thionamides, beta-blockers, iodides, radioactive iodine and surgery. In pregnancy, there is a need to strike a delicate balance having in mind the well-being of the developing foetus and that of the mother. The thyroid disorder on its own has a deleterious effect on the foetus.

Surgery as an option is reserved for patients with simple goitres, those with controlled toxic goitre, malignant cases and those with compressive symptoms from a large goitre.

With these in mind, we report a case of a pregnant woman with giant goitre presenting with compressive respiratory symptoms at 17 week gestation and had a subtotal thyroidectomy done under local anaesthesia.

Case Report:

A 35 year old G⁵P⁴⁺⁰, 4 alive presented with a 2 years history of anterior neck swelling with associated 1 year history of neck pain with periodic cessation of breathing, also of 1 year duration. This was accompanied with difficulty in breathing. There was no history of dysphagia, no change in voice, no loss of weight. Physical examination revealed an acutely ill looking woman in severe respiratory distress with a respiratory rate of 32 cycles per minute, associated with flaring of alae-nasi and sweating. Neck examination showed a multinodular goitre involving the two lobes of the thyroid gland and the isthmus. All other examinations were essentially normal. An assessment of simple goitre with respiratory obstruction in pregnancy was made. Investigation done included Packed Cell Volume (35%), fasting blood sugar (4.5mmol/l. Normal=3.6-5mmol/l). Two units of blood were cross matched.

After obtaining informed consent, patient was prepared for surgery. She had an intravenous infusion in place. On the operating table, she was put in supine position with sandbag under the shoulder and neck extended on a head ring. Local anaesthesia was given with 20mls of 2% xylocaine double diluted

73 with equal volume of water for injections and infiltration along the line of
74 incision. This was done repeatedly as the surgery progressed. Maximum
75 volume of anaesthesia used was 40mls of now 1% plain xylocaine.

76 The incision was deepened to the investing layer of deep cervical fascia
77 with upper and lower flaps raised. The investing layer incised longitudinally to
78 expose the strap muscles which were retracted along their fibres. The
79 pretracheal fascia was incised to expose the thyroid gland which was mobilized
80 completely from its bed. The inferior thyroid arteries were tied in continuity.
81 The superior thyroid arteries were also ligated. Thyroid gland was excised living
82 about $\frac{1}{8}$ th of the original size. Haemostasis was secured and drain inserted into
83 the empty bed of the thyroid gland. Few stitches were applied to the strap
84 muscles. The skin was closed with subcuticular stitches using nylon 1. Due to
85 the fact that patient was talking throughout the case; the recurrent laryngeal
86 nerves were not sought but carefully avoided using knowledge of its anatomy.

87 Immediate post up condition was satisfactory with an estimated blood
88 loss of 350mls. Intramuscular diclofenac was given followed by paracetamol
89 tablet for one week. No blood was transfused. The duration of the operation
90 was 2 $\frac{1}{2}$ hours, patient did well after the surgery and was discharged on the 3rd
91 day. She carried the pregnancy to term, delivered safely and was followed up
92 for 2 years without any problem. Surgical pathology of the mass weighing
93 600gm was colloid goitre. Figure 1, 2, 3 shows the patient pre-op, immediate
94 post- up and the mass removed during surgery respectively.

95 **Discussion:**

96 The first documented partial thyroidectomy was carried out by a
97 Frenchman, Pierre Joseph Desault in 1791(9). Earlier methods practiced by a
98 Moorish physician, Albucasis in about 952AD in Zahra, an Arab city of Spain led
99 to extirpation of the gland(5,9).

100 Thyroidectomy is usually performed under general anaesthesia
101 endotracheal intubation. Such facilities and personnel are usually not readily
102 available in most developing countries. Surgical care is insufficient or non-

103 existent in many regions of the world and the lack of access to surgical care
104 accounts for a high number of disability adjusted life years (DALY), defined as
105 years of healthy, life lost(10). WHO estimates that 2 billion people have no
106 access to basic surgical care and that surgery could be used to cure 11% of the
107 global burden of disease (11).

108 Local and regional anaesthesia for thyroidectomy has become common
109 practice and has been reported by a number of authors (5,12,13,14,15).
110 However, our extensive review of the literature found no report of giant goitre
111 operated under strict local anaesthesia without ketamine in a pregnant woman
112 and to our knowledge this is first case reported.

113 Surgery for thyroid diseases is reserved for failure of the standard
114 management and or in those with significant goitre causing stridor, respiratory
115 distress, dysphagia or carcinoma (6). The index patient presented with
116 respiratory distress.

117 Thyroid surgery is associated with high incidence of hypothyroidism
118 postoperatively. Other postoperative complications include hypopara-
119 thyroidism (1-2%) causing hypocalcaemia and recurrent laryngeal nerve
120 palsy (1-2%)(6).We did not bother to sought for either of the recurrent
121 laryngeal nerves as the patient talked with us thought the operation and
122 helped prevent issue of recurrent laryngeal nerve palsy. Surgical and

123 anaesthetics morbidity and mortality are also increased in pregnancy. In
124 pregnant patients presenting with goitre, airways can be difficult because of
125 accompanying pregnancy induced changes like generalized weight gain,
126 increase in breast size, respiratory mucosal edema and increased risk of
127 pulmonary aspirations. Haemodynamic responses to laryngoscopy can be
128 exaggerated and detrimental. Inadequate depth during the general
129 anaesthesia can lead to hypertensive crisis and dysrhythmias which can cause
130 considerable morbidity(7).

131 The reported pregnancy loss associated with general anaesthesia and surgery
132 of all types is approximately 8% and decrease to 6.5% in the second trimester
133 (6). The patient presented at 17 weeks gestation and carried the pregnancy to
134 term. She was followed up for up to 2 years post-up with no morbidity
135 recorded.

136 The patient was minimally investigated, requesting for essential
137 investigations and stayed three days in the hospital after the surgery. This was
138 a safe and cost effective procedure in a resource poor environment when
139 compared to the cost, complications associated with and availability of
140 complex general anaesthesia for same procedure in other clime.

141

142 **Conclusion**

143 Subtotal thyroidectomy for giant goitre can be done under strict local
 144 anaesthesia without recourse to use of ketamine in a pregnant woman. It is
 145 not only safe but it is cost effective for pregnant patients undergoing thyroid
 146 surgery when compared to general anaesthesia. Surgeons in training in
 147 developing countries should be encouraged to have adequate exposure and
 148 training in local anaesthesia, as it will help to avoid a situation where surgeons
 149 in peripheral hospitals are not able to perform thyroidectomy and patients
 150 made to live with the social stigma if the patient cannot afford the expenses of
 151 travelling to a teaching hospital. It is simple safe, acceptable and cost effective
 152 in our experience.

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196 Figure 1.The patient pre-op.

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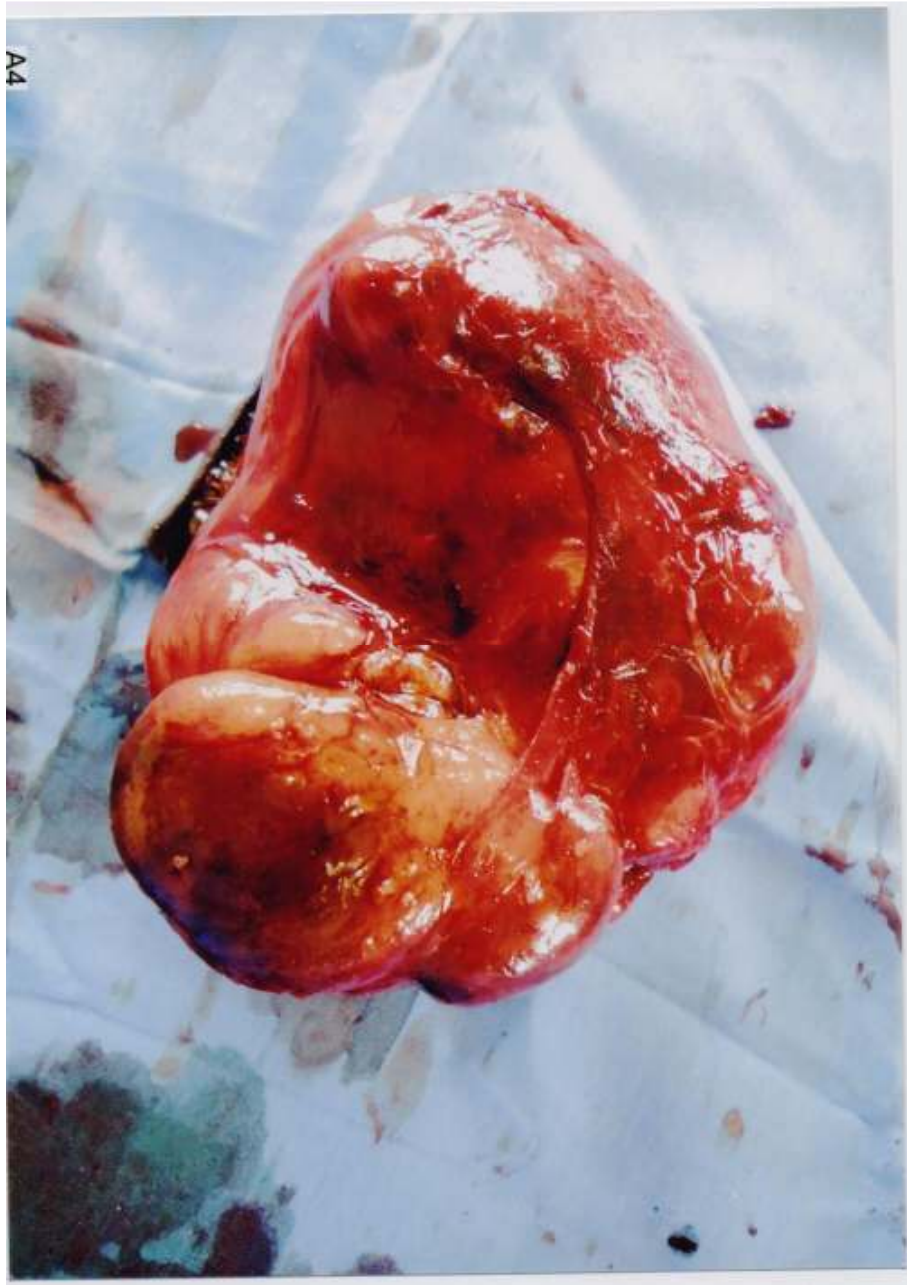
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201 Figure 2.The patient immediate post-op.



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203 Figure 3. The mass removed during subtotal thyroidectomy.

204 **Consent:**

205 We have consent from the patient.