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### Essay

## Vasectomy surgery: Where one should not underestimate the risk<sup>☆</sup>



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#### ABSTRACT

Vasectomy has been considered a minor surgical procedure, even more so in view of the fact that, most of the time, it can be performed under local anaesthesia in a doctor's office. However, a particular phenotype is frequently found among those cases in which the urologist decides to use general anaesthesia, that poses a challenge for the surgeon as well as the anaesthetist.

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### La vasectomía: una cirugía donde no se debe menospreciar el riesgo

#### RESUMEN

La vasectomía se ha considerado un procedimiento quirúrgico menor, máxime cuando en un alto porcentaje de las veces se puede realizar con anestesia local en un consultorio médico; sin embargo, en aquellos pacientes donde el urólogo decide programar con anestesia general se encuentra frecuentemente un fenotipo particular que ofrece dificultades tanto al cirujano como al anestesiólogo.

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##### Palabras clave:

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## Introduction

In a socio-economic environment in which the health system, the practitioners and the healthcare providers seek to contain costs by performing outpatient surgeries or minimally invasive procedures, the number of surgeries performed in doctor's offices and primary care centres has increased, with excellent profitability. Cost-effectiveness has been truly favourable for patients and for the healthcare system alike. However, the role of the anaesthetist in minimally invasive surgery is still challenging because apparently "minor" procedures like vasectomy under general anaesthesia may pose a high risk, to the extent that patients who have been scheduled by the urologist for general anaesthesia<sup>1-3</sup> especially because of a particular anatomy (high or difficult to manipulate testes), may also have physical characteristics that make airway management difficult. Consequently, the anaesthetic risk cannot be underestimated.

The important aim of this article concerning the implications of vasectomy under general anaesthesia is to create awareness of the challenges posed by difficult anatomical conditions of the patient for the urologist and for the anaesthetist, and which have not been reported in the literature but need to be known due to the risk they entail. Perhaps it is quite right to quote here the phrase that "although there is minor surgery, there is no minor anaesthesia".

## The procedure and general considerations

Vasectomy is a short surgery performed mainly with local anaesthetic infiltration. After localizing the vas deferens, the surgeon opens the layers of the scrotum, dissects the vas deferens and then ligates or severs both vas deferens (1-2 cm resection), cauterizes, seals with clips and/or fascia, etc.<sup>3,4</sup> In general, the rate of effectiveness of the various techniques is 97%,<sup>5</sup> and failure rates are lower than 1% with some techniques.

For the WHO, vasectomy is a surgical procedure that can even be performed by general practitioners in a surgical area with little requirements, or in the doctor's office.<sup>3,6</sup> The failure rate is 30% lower when compared with female sterilization, and the probability of postoperative complications is 20 times lower.<sup>7,8</sup>

Anti-anxiety medication is used in many institutions in order to help with the surgery,<sup>6</sup> but there is a latent risk of overdosing.<sup>9</sup>

A study conducted in 2005 found that the use of local vs. general anaesthesia varied substantially among the different clinics where the procedure was performed. In one of the clinics, 50% of patients received only local anaesthesia, 10% received general anaesthesia, and the remaining 40% received local anaesthesia plus sedation. In contrast, in another clinic general anaesthesia was given to 94% of the patients.<sup>10</sup>

Although neuroaxial anaesthesia may also be used with a T10-L1 block to anesthetize the anterior portion of the scrotum and the testes, it is not a preferred technique because of delayed recovery from the effects of regional anaesthesia in ambulatory patients.



**Photograph 1 – Patient following vasectomy under general anaesthesia. Profamilia Clínica, Bogotá.**

**Source: The authors.**

At the Profamilia clinic in Bogotá, the Colombian institution with the largest number of vasectomy procedures in this country, nearing 2200 per year, 7% of the patients are taken to this procedure under general anaesthesia and, of them, a high percentage (6 out of 10) exhibit predictors of a difficult airway such as a short broad neck, anterior neck line in front of the mid point between the chin and the mandibular angle, and difficulty extending the head (**Photograph 1**).

There are clear contraindications for performing the procedure in the office, including physical condition classification ASA3 or greater (severe or uncontrolled systemic disease), complex heart disease, obesity (BMI > 30 kg/m<sup>2</sup>), difficult airway predictors, OSA, etc.<sup>9</sup> These patients must be taken to surgery in a hospital setting in order to assess their condition and perform the procedure with the right team and equipment required to manage any complications that may arise.

At Profamilia, the practice is to schedule the procedure under local anaesthesia and no sedation, except in patients who ask for general anaesthesia of their own will, or in those with a history of surgery in the scrotal area that is predictive of a longer, more complex procedure. However, there is a percentage of patients that have to be rescheduled because, after infiltrating the anaesthetic, they do not tolerate the procedure given that the exploration of the vas deferens and scrotal manipulation are more time consuming, in particular due to their anatomic characteristics. These are the patients that are rescheduled for general anaesthesia and are the subject of this paper.

## Particular phenotype

General anaesthesia is warranted in patients requesting it or who will undergo several procedures in one stage, and in situations where the surgeon foresees a difficult approach.<sup>2,3</sup> Interestingly, patients in whom the urologist expects difficulty accessing the vas deferens and decides to operate under general anaesthesia, are also patients with a difficult airway.

This points to the possibility of a particular phenotype and, although the procedure is “minor surgery, by no means should the risk be underestimated”.

This phenotype exhibits characteristics such as abundant abdominal, suprapubic and scrotal fat pannus, with fat accumulation found even around the testes.<sup>2,11,12</sup> In patients with a BMI above 40, visualization and manipulation of the penis and scrotum may be seriously impaired<sup>13</sup>; palpation of the vas deferens may be difficult or impossible; and surgery may become protracted and complicated. The same obesity causing this abundant adipose pannus may be implicated in the anatomy of the difficult airway. Obese patients are described as having a four fold increase in the risk of intra- and postoperative complications, in particular respiratory complications.<sup>14</sup> Currently, obesity is rising dramatically, and it is increasingly frequent to find these types of patients in operating rooms.

Physiologically, tidal volume, residual capacity and expiratory reserve volume are diminished in obese patients and they are prone to alveolar and upper airway collapse.<sup>15</sup> They are also prone to desaturation, bronchospasm and hypoventilation. Obesity may be associated with predictors of difficult ventilation and difficult airway management, including reduced mouth opening, reduced cervical extension, shorter thyromental and mentosternal distance, and decreased thyromental height, increased neck circumference, and obstructive airway anatomy, all of which may come into play at the time of intubation, and produce sleep apnoea.<sup>9,14,15</sup>

Additionally, there are comorbidities associated with obesity, including gastro-oesophageal reflux, hypertension, and diabetes,<sup>14,15</sup> and close to 40% of obese patients may suffer from cardiovascular disease.<sup>9</sup> All this is compounded by the fact that, many times, the anaesthetist sees the patient for the first time on the day of surgery and there has been no workup for the patient's comorbid conditions.

Management of sedation and general anaesthesia in these patients may be difficult, and under- or overdosing are frequent, especially when it comes to certain drugs like opioids. A case is reported of an obese patient with Obstructive Sleep Apnoea syndrome where maintenance of anaesthesia was torpid and additional anaesthesia was required.<sup>16</sup>

In conclusion, there is a high percentage of patients given general anaesthesia for vasectomy because the urologist considers that they will pose difficulty with the approach to the vas deferens, who also represent a high risk when it comes to airway management, as if they had a particular phenotype. Further studies are needed in order to confirm this association.

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## Conflict of interest

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