

Case Report

PERFORMING PHACOEMULSIFICATION WHILE STANDING FOR PATIENT WHO IS UNABLE TO LIE FLAT

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ABSTRACT

Phacoemulsification in patients who are unable to lie flat can be challenging for ophthalmic surgeons. Difficulty in positioning the head can lead to inadequate surgical exposure, and awkward position of the body may lead to unnecessary high vitreous pressure and subsequent posterior capsule rupture. We describe a standing phacoemulsification technique for bilateral cataract in a patient who is morbidly obese, positioned at 30 degrees inclination in a reverse Trendelenburg position with hyperextension of the neck.

Key words: phacoemulsification, reverse Trendelenburg position, morbid obesity

INTRODUCTION

Patients who are unable to lie flat during cataract surgery due to various causes such as cervical kyphosis, morbid obesity and obstructive sleep apnea (OSA) present a challenge to the ophthalmic surgeon. This condition can also complicate the surgery as the patient will assume improper positioning and making the surgeon uncomfortable [1]. Obese patients particularly are prone to have increased intracranial venous pressure and intraocular pressure from raised intra-abdominal pressure due to central obesity on lying flat [2]. They are at increased risk of intra operative complications such as posterior capsular tear due to high vitreous pressure and in return, shallow anterior chamber [3]. Furthermore, the risk of anaesthetic complications is higher making them unsuitable for general anaesthesia. Other issues such as associated comorbidities, difficult intravenous access and post-operative care also need to be considered when subjecting these patients to surgery [3].

Phacoemulsification with the surgeon in a standing position for patients who are unable to lie supine has been reported and proposed by a few surgeons [4]. Obesity and respiratory problems account for about 60% of the cases [3, 5]. Unfortunately, the operating room microscope is in an awkward angle of approach in patients who are seated or in a partially reclined position. Forward movement of the posterior capsule and vitreous due to gravitational pull can occur when the head is upright. Together with shallowing of

the anterior chamber, this caused an increased risk for posterior capsule rupture and vitreous loss [6].

We report a case in which phacoemulsification was performed for bilateral cataract in an obese patient with OSA who cannot lie flat and was seated at 30 degree position and his neck hyper extended.

CASE REPORT

A 56 years old obese man with underlying OSA requiring bilateral positive airway pressure (BiPAP) machine during sleep had significant bilateral posterior subcapsular cataract in both eyes. The best corrected visual acuity was 3/60 in the right eye and 6/60 in the left eye. He was scheduled for bilateral cataract extraction using the standing phacoemulsification technique (STP) by a single surgeon on different occasions.

Intraoperatively, the patient was seated on a dental chair reclined at 30 degrees. This position has been described as reverse Trendelenburg position (RTP) from previous authors [3]. The head rest was levelled so that the patient's neck is hyperextended allowing the face to be on a flat plane beneath the operating microscope (Figure 1). Both surgeries was done using the Zeiss operating microscope (Carl Zeiss, Oberkochen, Germany) and the surgeon was standing at a temporal approach from the patient. The microscope pedal was controlled by the surgeon (Figure 2).



Figure 1 Patient at 30 degree reclined position (Left), with the face levelled to a flat plane beneath the microscope (Right)



Figure 2: Surgeon in standing position with right foot controlling the microscope pedal

The surgery was performed under subtenon local anaesthesia using a temporal clear corneal approach. The rest of the surgery was performed in the usual manner and was uneventful. The post-operative course went smoothly. At five weeks post procedure, his visual acuity was 6/9 in the right eye and 6/12 in the left eye, and the patient was satisfied with this vision.

DISCUSSION

Modern day cataract surgery via small incisional phacoemulsification has become the procedure of choice. Medical conditions and neck deformities restrict patients from lying supine to achieve optimum positioning during conventional seated surgery. Morbid obesity can further impose intra operative complications such as posterior capsular tear and vitreous loss due to high vitreous pressure [2].

Modifications in certain steps of the usual phacoemulsification technique have enabled surgeons to perform cataract surgery in difficult patients. Similar outcomes in visual acuity between standing surgery and the conventional seated surgery have been reported. SPT showed superb safety profile with no intra operative complications [7]. Mansour et al reported standing phacoemulsification in reverse Trendelenburg position (RTP) in four eyes of 3 morbidly obese patients with no complications in all patients [3]. However, other authors have reported posterior capsular tear requiring anterior vitrectomy and retained cortical matter with the standing technique that was done using headlamp illumination and magnification with a loupe [5].

As opposed to other reports where cataract extraction was done via loupe magnification or the microscope pedal was controlled by a third person [4, 5], the surgery in our patient was performed using the standard operating microscope with the surgeon standing and controlling the pedal herself. We did not encounter any serious complications using this technique.

For obese patients undergoing cataract surgery, this technique in fact might be advantageous. Lowering of intracranial venous pressure and vitreous pressure can be achieved by 15 to 30 degree RTP in morbidly obese individuals. This position can tremendously improve alveolar-arterial oxygen difference to baseline limit. Furthermore, the 30 degree RTP is thought to be the best position for anaesthesia in morbidly obese patients [3].

Intra operative shallowing of the anterior chamber due to high vitreous pressure can be overcome by the use of an

anterior chamber maintainer [3]. Shallowing of the anterior chamber in SPT is mainly due to the effect of gravity in seating position, pushing the posterior capsule and vitreous body forward [6]. In this patient, although he was seated, his hyper extended neck allowed his head to be positioned on a flat plane beneath the operating microscope to achieve a good red reflex. Furthermore, with the neck in hyperextended position, the effect of gravity towards the eyes can be ameliorated and the risk of posterior capsular tear reduced.

CONCLUSIONS

Standing phacoemulsification technique offers an alternative method to the modern day cataract surgery. It gives a new hope for cataract removal in difficult patients that cannot undergo conventional seated surgery even under general anaesthesia. Further studies may determine the safety profile and visual outcomes of this technique in comparison to the conventional seated phacoemulsification. However, we recommend this technique to be performed by an experienced senior surgeon. Early removal of visually significant cataract should be considered in difficult patients with problematic comorbidities.

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Received: May 2017

Accepted for publication: June 2017