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AN ANATOMICAL STUDY OF THE OBTURATOR CANAL AND DORSAL NERVE OF THE CLITORIS AND THEIR RELATIONSHIP TO TRANSOBTURATOR SLINGS

Hypothesis / aims of study

Use of synthetic suburethral slings has simplified the treatment of urinary stress incontinence. Complications after TVT® and SPARC® procedures, which penetrate the retro-pubic space include bladder, minor and major blood vessel (obturator or iliac) and bowel perforation. Recently, a transobturator route of insertion of suburethral slings has been described avoiding the retro-pubic space. Although occasional bladder perforations have been reported, this new approach avoids the risk of bowel and allegedly of major vessel perforation. Several devices have been developed using an "out-in" (Monarc®) technique whereas one (TVT-O®) is inserted from inside-out. The dorsal nerve of the clitoris runs along the internal surface of the ischio-pubic ramus in Alcock's canal and could potentially be at risk from transobturator devices. The obturator vessels and nerve with their anterior and posterior divisions could also be at risk. The aim of this anatomical study is to compare the distance between the different devices for the treatment of stress incontinence, and the dorsal nerve of the clitoris and the obturator canal.

Study design, materials and methods

We performed a dissection of the dorsal nerve of the clitoris from its origin from the pudendal nerve and followed its course in Alcock's canal to the point where it crosses the inferior margin of the pubic bone on 5 embalmed hemipelves. We also prepared the obturator externus muscle and the obturator canal with its contents.
Four procedures were performed on each specimen reproducing the actual way of insertion of each device. Tapes were not attached. The shortest distance between each device needle and the dorsal nerve of the clitoris was measured. The distance to the obturator canal was measured from the needle to the centre of the internal os for the TVT® and SPARC®, and to the centre of the external os for the Monarc® and TVT-O®.

Results

	Dorsal nerve of clitoris		Obturator canal	
	Median (Range)	Mean +/- Std Dev	Median (Range)	Mean +/- Std Dev
TVT ®	16 mm (12 – 22)	16.2 +/- 4.4 mm	40 mm (35 – 44)	40 +/- 3.4 mm
SPARC ®	15 mm (11 – 19)	15.2 +/- 3.0 mm	41 mm (35 – 43)	40.2 +/- 3.1 mm
Monarc ®	15 mm (10 – 16)	13.8 +/- 2.7 mm	25 mm (22 – 30)	25.2 +/- 2.9 mm
TVT-O ®	14 mm (10 – 15)	13.2 +/- 2.2 mm	20 mm (17 – 23)	19.6 +/- 2.3 mm

Dissection of 5 further hemipelves is currently being performed which includes fresh frozen specimen dissections.
A description of the dorsal nerve of the clitoris with its variations will be provided. In addition the relationship of the passage of the devices to the clitoris including the crura will be described.
A demonstration of the potential risk to the clitoris and its nerve by prepubic passage of TVT will also be provided.

Interpretation of results

The distance between the different devices and the dorsal nerve of the clitoris are similar. In this study, the TVT-O device is 5 mm closer to the obturator canal than the Monarc needle. However, the clinical significance of this is unknown. It is possible that these distances are

altered by the dissection process and for that reason fresh frozen dissection will be carried out.

Concluding message

Based on our initial series of embalmed cadaveric dissection, transobturator devices are at least 10 mm away from the dorsal nerve of the clitoris. These distances refer to the introducing needle. The tape width is 10 mm and may therefore be closer to the structures in question.

The TVTO ® needle crosses the obturator foramen somewhat closer to the obturator canal than the Monarc ®. In addition to anatomical studies, the potential clinical sequelae of involvement of the dorsal nerve of the clitoris or branches of obturator vessels and nerve need to be investigated.