

Surgical removal of a transobturator mesh sling

or single incision mini-sling

What is mesh?

Mesh is a manufactured material, usually made up of strands of polypropylene woven like a net. There are different types of mesh made of various materials. Mesh can be inserted through different routes to treat a number of medical conditions. Generally, mesh is used to provide support to weakened tissues in the body such as in the abdominal wall to treat hernias. In women, mesh has been used to treat both stress urinary incontinence and pelvic organ prolapse for many years. When used to treat stress urinary incontinence it is referred to as a mesh sling.

Mesh is intended to be permanent once placed in the body. This affects your options for treatment if there are complications, as it can be difficult and sometimes impossible to completely remove. Surgery to remove a mesh sling will depend on the type of sling you have.

What are the different types of mesh sling?

There are three main types of mesh slings used to treat stress urinary incontinence

- **Trans-obturator mesh slings (e.g. TVT-O or TOT)** support the bladder neck and pass from just under the skin of the front of the vagina, horizontally outward and through the groin muscles (inner thigh).
- **Single incision mini slings** support the bladder neck and are fixed into the tissues using small plastic anchors.
- **Retropubic mesh slings (e.g. TVT)** support the bladder neck and pass from just under the skin of the front of the vagina, behind the pubic bone and up through the abdominal wall.

This information leaflet is for those women who have had a trans-obturator mesh sling (e.g. TVT-O or TOT) or a single incision mini sling.

Reasons why women may choose to have removal of a transobturator mesh sling or mini-sling.

1. Vaginal problems

Mesh can sometimes come through into the vagina if the skin of the vagina doesn't heal over properly or opens up after surgery. This is called **vaginal mesh exposure**. Sometimes this can happen without you being aware of it and it is discovered when you have a vaginal

44 examination for another reason. Mesh exposure can cause some or all of the following
45 symptoms:

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- 47 • Vaginal discharge or bleeding, and vaginal infections.
- 48 • Painful sex for you and/or your partner, or bleeding after sex.
- 49 • A prickly sensation or being able to feel the mesh in the vagina.
- 50 • Pain in the vagina, pelvis, groin, thigh or a combination of these.

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52 2. Bladder or urethral problems

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54 The mesh can also come through into the bladder or the urethra, the tube that releases
55 urine from the bladder. This is called **mesh extrusion or perforation**. This can happen at the
56 time of surgery or some time (perhaps years) later. It happens much less often than vaginal
57 mesh exposure. It can cause problems including:

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- 59 • Frequent urinary tract infections (UTIs).
- 60 • Blood in the urine.
- 61 • Difficulty emptying the bladder.
- 62 • Pain when passing urine or having sex.
- 63 • Leaking urine or having to get to the toilet quickly (urgency).

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65 3. Other problems

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67 Some women who have had mesh surgery experience symptoms where there may be no
68 obvious cause to explain them. These symptoms can severely impact your physical,
69 emotional and psychological health and your quality of life and can be difficult to treat.
70 Some but not all of these are similar to problems that can also happen after surgery that
71 doesn't include mesh.

72

73 These problems can include:

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- 75 • Pain or changes in sensation in the back, abdomen, pelvis, leg, vagina or groin.
- 76 • New urinary symptoms of either retention of urine (being unable to empty your
77 bladder when full), urge incontinence (sudden and strong need to urinate),
78 persistent or recurrent stress incontinence or pain emptying the bladder.
- 79 • Recurrent urinary infections.
- 80 • Vaginal discharge.

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82 Some women report the development of autoimmune diseases, fibromyalgia and allergies
83 following their mesh implant. At present there is no scientific evidence to support a link
84 between mesh implants and these conditions or that these symptoms or conditions will
85 improve following mesh removal surgery.

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90 What are the **alternatives** to mesh removal surgery?

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92 There are several different options for treating mesh complications. The treatment you
93 receive will depend upon the nature of your symptoms, your examination findings and
94 investigation results, and ultimately, your treatment preference. Some women choose not
95 to have mesh removal surgery and prefer to explore non-surgical options rather than
96 proceeding immediately to mesh removal surgery.

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98 The alternative non-surgical options include:

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- 100 • No active treatment.
- 101 • Physiotherapy or other physical therapies.
- 102 • Pain management programme, including medication and psychological support.

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104 Combinations of these treatments may be recommended.

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106 This information leaflet explains more about **surgical** treatment options.

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108 What types of mesh removal surgery are there?

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110 The type of surgery needed to remove mesh varies for each individual woman.

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- 112 • If the mesh is found to be infected or extruding into one of your internal organs such
113 as your bladder or urethra, it is highly likely that the multidisciplinary team will
114 recommend mesh removal surgery to prevent further harm.
- 115 • If the mesh sling has cured your incontinence and you have symptoms that are
116 difficult to reliably attribute to mesh, the decision to proceed with mesh removal
117 surgery is more difficult. In these cases the multidisciplinary team may recommend
118 you do not proceed with mesh removal surgery and may offer you other treatments
119 or a second opinion.

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121 Importantly, it may not be necessary (or possible) to remove all of the mesh to improve
122 symptoms associated with mesh complications, but some women prefer this option.

123

124 *Mesh sling division*

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126 The mesh sling can be divided or cut without removing any of the mesh. This option may be
127 offered to help with difficulty emptying the bladder if the mesh sling is thought to be too
128 tight. It may also be considered to relieve tension on the mesh, where this is thought to be
129 causing pain. This is usually a minor procedure which can be carried out as a day case under
130 local, regional (spinal) or general anaesthetic.

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132 *Partial removal of the vaginal portion of a transobturator mesh sling or mini-sling*

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134 A part of the mesh sling can be removed by an operation through the vagina. This is usually
135 performed if the mesh has come through the vaginal skin (mesh exposure) and is usually a

136 minor procedure removing a few fibres or a few centimetres of mesh. This can be carried
137 out as a day case under local, regional (spinal) or general anaesthesia. **After this procedure**
138 **it is generally still possible to identify and remove the remaining mesh if needed.**
139

140 *Complete removal of the vaginal portion of a transobturator mesh sling or mini-sling*
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142 The entire portion of mesh under the skin of the vagina (usually 5-8cm in length) can be
143 removed. This is a moderate sized operation under general or regional (spinal) anaesthesia,
144 and usually requires an overnight hospital stay. A bandage (pack) is placed inside the vagina
145 at the end of the operation to help prevent bleeding and a catheter is usually left in the
146 bladder overnight. The pack and catheter are usually removed the following day. Although
147 all of the vaginal part of the mesh is removed during this operation, the arms that pass
148 through the groin muscles into the inner thigh are left behind. **It may not be possible to**
149 **remove the remaining groin mesh or anchors later (see below).**
150

151 *Complete removal of a transobturator mesh sling*
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153 Some women decide to have the mesh removed from the groin area at the same time as
154 vaginal mesh removal, so that **all** of the mesh sling is removed from the body.
155

156 Transobturator mesh slings can be difficult to remove completely from their attachments in
157 the groin. It is usually possible to remove the vaginal part of the mesh sling completely but
158 the part of the sling (transobturator mesh sling) that goes into the obturator and groin
159 muscles can be difficult to find. Removal of the mesh in the groin is more feasible if the
160 vaginal part of the mesh has not already been removed as the mesh can be traced from the
161 vaginal end.
162

163 Removal of mesh from the groin may be offered to treat problems such as groin or leg pain
164 or weakness thought to be due to the presence of mesh. Some women who have other
165 symptoms decide to have the mesh removed from the groin at the same time as vaginal
166 mesh removal, as they are concerned that this might not be possible as a later date if the
167 vaginal part of the mesh alone is removed.
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169 If you are planning to have a **transobturator mesh sling** removed from the vagina:
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- 171 • It is not usually necessary to remove the entire mesh for most complications that
172 occur following transobturator mesh slings.
- 173 • Your surgeon will discuss how much mesh will be removed and the possible benefits
174 and risks of having the mesh removed from the groins at the same time (complete
175 removal) as this may not be possible after complete removal of the vaginal portion.
- 176 • Complete removal of a transobturator mesh sling may not be possible, even when
177 the vaginal part of the mesh has not been removed.
178

179 Mesh removal from the groin is a major procedure requiring a hospital stay of 2-4 days and
180 regional (spinal) or general anaesthesia. Sometimes a bandage (pack) is placed inside the
181 vagina at the end of the operation if the vaginal part of the mesh has been removed at the
182 same time, to help prevent bleeding problems and a catheter is left in the bladder

183 overnight. Your surgeon may also insert a thin plastic tube (a drain) into the groin to draw
184 blood away from the tissues at the end of the operation. The drains, catheter and pack, if
185 used, are usually removed the morning after surgery. The recovery time after groin mesh
186 removal surgery is usually around 4-6 weeks.

187

188 Pain may not be helped by the surgery and may become worse. There is a risk of bleeding
189 during the procedure and significant bruising may occur afterwards. It is also possible for
190 nerves to become damaged, causing pain, numbness or weakness in the inside of the thigh.

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192 *Complete removal of a single incision mini-sling with anchors*

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194 Single incision mini slings can be difficult to remove completely from their attachments in
195 the groin. Plastic anchors hold the single incision mini slings in position in the tissues
196 surrounding the urethra. These anchors can usually be removed through the vagina at the
197 same time as mesh removal from the vagina. Sometimes it is difficult to find the anchors in
198 the tissues, and, even if they are located, they can be difficult or impossible to dislodge from
199 the tissues. Occasionally it is necessary to make a cut in the groin to remove the anchors but
200 this is not common. Removal of the anchors is more feasible if the vaginal part of the mesh
201 has not already been removed.

202

203 If you are planning to have a **single incision mini sling** removed from the vagina

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- 205 • It is not usually necessary to remove the entire mesh for most complications that
206 occur following single incision mini slings.
- 207 • Your surgeon will discuss the possible benefits of having the plastic anchors removed
208 from the muscles at the same time (complete removal) as this may not be possible
209 after complete vaginal removal.
- 210 • Complete removal of a single incision mini sling including the plastic anchors may not
211 be possible, even when the vaginal part of the mesh has not been removed. It may
212 not be possible to locate the plastic anchors in the muscles.

212

213 Removal of the vaginal mesh sling and anchors from the muscles is a medium size procedure
214 that can usually be done with a short hospital stay under a regional (spinal) or general
215 anaesthetic. Sometimes a bandage (pack) is placed inside the vagina at the end of the
216 operation to help prevent bleeding problems and a catheter is left in the bladder overnight.
217 The pack and catheter are usually removed the morning after surgery. The recovery time
218 after total removal of single incision mini-sling surgery is usually around 2-4 weeks. If a cut
219 in the groin is needed this will increase the recovery time.

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221 Pain may not be helped by the surgery and may become worse. There is a risk of bleeding
222 during the procedure and significant bruising may occur afterwards. It is also possible for
223 nerves to become damaged, causing pain, numbness or weakness in the inside of the thigh.

224 *Removal of mesh from the urethra*

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226 Mesh that has gone into the urethra (extrusion or perforation) is a serious complication. The
227 mesh is usually removed by an operation through the vagina. This involves opening up the
228 vagina and urethra to remove the mesh and then repairing the holes in the urethra and the
229 vagina. The urethra is a very delicate organ and the repair may need to be reinforced with a
230 Martius graft to help it to heal. A Martius graft is a piece of fat from inside the labia majora
231 which is tunnelled under the skin to cover the urethral repair to help it to heal.

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233 This is a moderate sized operation and may need hospital stay of 2-4 days. The operation
234 can be done under general or regional (spinal) anaesthesia. If mesh is removed from the
235 urethra, through the vagina, you will need a catheter in the bladder for 1 to 3 weeks, to
236 allow the urethral tissues to heal fully. If the tissues do not heal properly, there is a risk that
237 a fistula will develop. A fistula is a connection between the urethra and the vagina and can
238 cause severe and constant urinary leakage. This is a serious complication which usually
239 needs further surgery to repair it.

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241 Sometimes mesh in the urethra is removed without opening the urethra, either by using a
242 laser in the urethra or by cutting the mesh from the inside of the urethra. This is not always
243 possible. These are smaller procedures than removing the mesh through the vagina and can
244 be done as a day case. However, there is a risk that some mesh will be left behind in the
245 wall of the urethra and that you might need to have further surgery to remove this.

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247 *Removal of mesh from the bladder*

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249 Mesh that has gone into the bladder (extrusion or perforation) is a serious complication.
250 The mesh can be removed from the bladder using either keyhole or open surgery. During
251 this operation the bladder is opened to remove the mesh and the bladder is then repaired
252 with stitches. Removal of the rest of the mesh from the vagina or from the groin can be
253 performed at the same time as removal of mesh from the bladder.

254

255 It is usually necessary to leave a catheter in for around 1 to 3 weeks after this surgery to
256 allow the bladder tissues to heal fully. If the bladder does not heal properly, there is a risk
257 that a fistula (connection between the bladder and the vagina causing severe and constant
258 incontinence) will develop. This is a serious complication which usually needs further
259 surgery to repair it. The recovery time after mesh removal from the bladder is usually
260 around 4-6 weeks.

261

262 Sometimes it is possible to remove mesh in the bladder using a laser during a telescopic
263 examination of your bladder (cystoscopy). This is usually a minor procedure that can be
264 done as a day case and may be suitable for people who have medical conditions that make
265 major surgery risky. This approach is not always possible and there is a risk that mesh will
266 be left behind in the wall of the bladder and you may need further surgery to remove this.

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270 Complications of surgical removal of a transobturator mesh sling or mini-sling

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272 Surgical removal of a mesh sling can make some problems worse therefore mesh removal
273 surgery may not be the right treatment option for you. The risks of mesh removal surgery
274 are different for each woman and are dependent on a number of factors such as:

- 275 • How close the mesh is to your urethra or bladder.
- 276 • The amount of mesh to be removed.
- 277 • Previous mesh removal surgery.
- 278 • The amount of scarring in the tissues.
- 279 • If you have more than one mesh implant in place.

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281 Mesh removal may not help all or even any of the symptoms you feel are related to your
282 mesh implant e.g. groin pain, recurrent urinary infection, vaginal discharge, pain,
283 fibromyalgia, autoimmune conditions. Urinary symptoms may not improve and new
284 symptoms may develop. Even if symptoms do not improve or if they get worse, some
285 women experience a psychological benefit knowing that the mesh implant has been
286 removed from their body.

287

288 Possible complications of surgery;

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- 290 • There is a risk of injury to the urethra or bladder during mesh removal surgery. If
291 this occurs, the injury will need to be repaired immediately. If the injury does not
292 heal properly, a fistula can develop. A fistula is a connection between the urethra or
293 bladder and the vagina and can cause severe and persistent urinary leakage. This is a
294 serious complication which usually requires further surgery.

295

- 296 • There is a risk of significant bleeding requiring blood transfusion, especially with
297 total mesh removal surgery involving surgery to remove mesh or plastic anchors
298 from the obturator muscles or groin.

299

- 300 • **Surgery in the groin area carries risk of injury to muscles and nerves. Although the**
301 **risk is small, if a nerve or muscle injury did occur it could result in permanent leg**
302 **weakness or numbness (see above).**

303

304 Complications after the operation (short-term)

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- 306 • Post-operative pain may be worse than the pain before surgery, especially if you
307 have chronic pain affecting other parts of your body.

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- 309 • There is a risk of significant bruising and wound infection

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- 311 • All operations carry a risk of developing a blood clot in your leg or lung (deep vein
312 thrombosis – DVT and pulmonary embolism - PE). The risk of this complication is
313 higher in women having total mesh removal as the operating time is longer and you
314 may be less mobile for a few weeks after surgery.

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316 Complications after the operation (long term)

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- There is a significant chance that stress incontinence symptoms will come back after division or removal of the mesh sling. It is difficult to know how likely this is, but the risk is higher the more mesh that is removed. It is possible to have surgery for stress urinary incontinence at the same time as mesh removal surgery. Your surgeon will discuss whether this would be appropriate for you, what your options are and what the added risks of this surgery might be.
- **Pain may improve following mesh removal surgery but then return a few months later.** There is no guarantee that mesh removal surgery will improve symptoms of pain in the long term.
- You might need further treatment for complications after mesh removal surgery or for urinary incontinence

359 What I would like to achieve from mesh removal surgery – my goals

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After you have considered carefully which treatments might be best for you, use this section to write down your thoughts about each treatment option. You may find it helpful to complete these sections with your doctor.

1. Which symptoms do you hope will get better after mesh removal?

2. Which type of mesh removal have you chosen and why?

3. Do you understand the different mesh removal options and that it is not always possible to remove all the mesh?

4. Any other goals you have from this surgery?

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363 Consultant comments

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This section can be used for the doctor to write down comments about mesh removal surgery that are specific to you personally. This can be done after you have discussed the options with your doctor

1. Which symptoms are likely to be addressed by having mesh removed?

2. Which type of mesh removal do you feel is most appropriate and why?

3. Have the different options for mesh removal and the pros and cons of each been explained and that it is not always possible to remove all the mesh?

4. Have other goals of surgery been explored?

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367 [Mesh Complication Terms you may have come across](#)

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369 **Conservative management**

370 Treatment or management that does not involve surgery.

371

372 **Mesh erosion**

373 This is a general term for any synthetic mesh or mesh sling that is found perforating an
374 organ after surgery, such as the urinary tract or bowel. This term is also used to refer to
375 mesh exposure or mesh extrusion.

376 See Mesh exposure, Mesh extrusion.

377

378 **Mesh exposure**

379 Mesh or mesh sling that is visible in the vagina or rectum. This can be asymptomatic (when
380 the woman is not aware/ bothered by the potential problem) or there may be symptoms
381 such as pain or bleeding.

382 See Mesh erosion, Mesh extrusion.

383

384 **Mesh extrusion**

385 Passage of the mesh sling gradually out of a body structure or tissue.

386 See Mesh erosion, Mesh exposure.

387

388 **Fistula**

389 An abnormal connection that forms between 2 hollow spaces in the body, such as bladder,
390 intestines, or blood vessels. They can form after surgery, injury, infection or inflammation.

391

392 **Mesh sling**

393 A flat strip of woven synthetic material, usually made of polypropylene, which is placed
394 surgically below the urethra (suburethral) for the treatment of stress urinary incontinence.
395 Mesh slings are often inserted using trocars (needles) and can be placed behind the pubic
396 bone (via the retropubic route) or through a part of the pelvis called the obturator foramen
397 (via the transobturator route). Some mesh slings are also sometimes inserted using only a
398 single vaginal incision (so called 'single-incision mini-slings'). These devices are also
399 commonly referred to as 'tapes'.

400

401 **Multidisciplinary team (MDT)**

402 A team of healthcare professionals that is formed to help diagnose and/or treat complex
403 conditions. MDTs are generally used when it is suitable for care to be provided on an
404 individual case basis and when the complex nature of the condition requires input from
405 many professionals in different areas of medicine.

406

407 **Retropubic mesh sling**

408 A method to insert a synthetic suburethral mesh sling to treat the symptoms of stress
409 urinary incontinence. A needle is inserted upwards through a small incision in the vaginal
410 wall below the urethra, passing behind the pubic bone and through the abdominal wall.

411 Each arm of the mesh goes through the space behind the pubic bone and into the

412 abdominal muscles in a U shape and supports the urethra. (e.g. TVT, IVS).

413

414 Single-incision mini-sling (SIMS)

415 A surgical procedure to insert a synthetic suburethral mesh sling to treat the symptoms of
416 stress urinary incontinence. The slings are shorter than retropubic and transobturator mesh
417 slings and are inserted using only a single incision in the vagina. The sling is usually attached
418 to the tissues at each end with a small plastic anchor. There are several designs of mini-
419 slings, each of which have different tissue anchor or fixation points.

420 e.g. Non-adjustable: Contasure Needless, TVT-Secur, MiniArc, Ophira; Adjustable: retropubic
421 (Ajust), transobturator (TOA).

422

423 Synthetic mesh

424 A man-made, net-like product. Polypropylene is the most common material that mesh is
425 made from. Other terms used for mesh when used to repair prolapse include tape, ribbon,
426 sling and hammock.

427

428 Transobturator inside-out mesh sling (TVT-O)

429 A method to insert a synthetic suburethral mesh sling to treat the symptoms of stress
430 urinary incontinence. A needle like device is used to insert a mesh sling horizontally through
431 the obturator foramen from an incision in the vagina to an exit point on the inner thigh.
432 Each arm of the mesh lies in the muscles that overlie the obturator foramen and in the
433 muscles of the upper inner thigh.

434

435 Transobturator outside-in mesh sling (TOT)

436 A method to insert a synthetic suburethral mesh sling to treat the symptoms of stress
437 urinary incontinence. A needle like device is used to insert a mesh sling horizontally through
438 the obturator foramen from an incision on the inner thigh to an incision in the vagina. Each
439 arm of the mesh lies in the muscles that overlie the obturator foramen and in the muscles of
440 the upper inner thigh (e.g. MONARC, Obtape).

441