# NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

## INTERVENTIONAL PROCEDURES PROGRAMME

# Interventional procedure overview of fetal cystoscopy for diagnosis and treatment of lower urinary outflow tract obstruction

Fetal lower urinary outflow tract obstruction prevents the unborn baby from passing urine. This can result in a reduction in the volume of amniotic fluid, and problems with the development of the baby's lungs and kidneys. Fetal cystoscopy is a procedure in which a flexible camera is inserted into the baby's bladder to identify the cause of obstruction and to guide treatment to allow urine to pass freely.

## Introduction

This overview has been prepared to assist members of the Interventional Procedures Advisory Committee (IPAC) in making recommendations about the safety and efficacy of an interventional procedure. It is based on a rapid review of the medical literature and specialist opinion. It should not be regarded as a definitive assessment of the procedure.

## Date prepared

This overview was prepared in June 2006

## Procedure name

- Fetal cystoscopy (diagnostic and therapeutic)

## Specialty societies

- British Association of Perinatal Medicine
- British Maternal and Fetal Medicine Society
- Royal College of Paediatrics and Child Health
- Royal College of Obstetricians and Gynaecologists
- Paediatric Intensive Care Society
- British Association of Paediatric Urologists

# Description

## *Indications*

Fetal lower urinary outflow tract obstruction. This condition may be associated with various developmental abnormalities. The obstruction may result from a number of pathologies including urethral atresia, or posterior urethral valves and can be partial or complete. Severe obstruction may lead to oligohydramnios (i.e. reduction in amniotic fluid volume) and pulmonary and/or renal dysplasia. Pulmonary and/or renal dysplasia may be severe enough to cause death soon after birth from respiratory or renal failure respectively; or it may require ventilatory support and/or renal dialysis or kidney transplantation. The long-term prognosis for children who require dialysis or transplantation in infancy is very poor, therefore the procedure is only indicated if there is preserved kidney function (i.e., urine production); in reality, accurately predicting fetal renal function (for example, using urine electrolytes, ß2-microglobulin and ultrasound criteria) is difficult. Even if the management of the obstruction is successful and amniotic fluid is restored, chronic renal failure may occur, and dialysis or transplantation are often required.

## *Current treatment and alternatives*

Alternative treatment options include: expectant management, termination of pregnancy, repeat vesicocentesis, open fetal vesicotomy, or vesico-amniotic shunt. Shunting aims to bypass the obstruction, with definitive treatment of the obstructive lesions required post-natally.

## *What the procedure involves*

Fetal cystoscopy is in principle a diagnostic procedure, (e.g. helping to determine the cause of an obstruction),but can also be used with therapeutic intent, (e.g. enabling ablation of posterior urethral valves).

The procedure can be undertaken either under general maternal anaesthesia or local anaesthetic infiltration. Under ultrasound guidance a trocar or large gauge needle is introduced through the maternal abdomen, the uterus, the amniotic cavity, the fetal abdomen, and finally into the fetal bladder. A flexible endoscope is introduced through the needle lumen or through a cannula. The bladder wall and uteric orifices, and the orifice of the posterior urethra are inspected, and then the posterior urethra is entered. Posterior urethral valves may be manipulated with hydro ablation (saline aspiration), guide-wire probing, or may be ablated with electro-coagulation or laser. The success of treatment is assessed by Doppler imaging of fluid flow from the posterior urethra into the amniotic cavity.

## *Efficacy*

### Diagnosis

In a case series of 13 fetuses good visualisation of the fetal bladder was achieved in 92% (12/13) of fetuses[1]. Among the fetuses with adequately visualised bladders, it was possible to enter the posterior urethra in 50% (6/12), and to identify the anatomical location of the urinary obstruction in 42% (5/12). Of the total 13 fetuses suspected of having posterior urethral valves an alternative diagnosis was reached following cystoscopy in 15% (2/13) of fetuses. In one fetus with a pre-procedural diagnosis of urethral atresia, no urethral atresia was found at cystoscopy.

In a second case series the cystoscopic appearance of the proximal urethra was in agreement with (non-invasive) ultrasound imaging in 91% (10/11) of fetuses, although in one fetus a dilated urethra was found in cystoscopy which was not evident on US imaging[2].

### Treatment

The data relating to cystoscopy guided therapeutic interventions was of poor quality, originating from uncontrolled studies, and included limited clinical outcomes.

One case series demonstrated successful hydro-ablation of posterior urethral valves in 1 of 4 fetuses[1]. In the same series guide-wire manipulation of posterior urethral valves was successful in 5 of 9 of fetuses with such a pathology. Overall in this case series a normal renal outcome was achieved in 5 of 8 of fetuses surviving to a live birth.

A second case series reported that urethral patency and complete bladder emptying following guide-wire probing was achieved in 9% (1/11) of fetuses undergoing a cystoscopically guided intervention[2]. In the same series the urethra was successfully cannulated in 27% (3/11) of fetuses

The case series and case reports recorded overall survival in between (0 of 1)[3], (1 of 2)[4], 69% (9 /13)[1] and (1 of 1)[5] of fetuses treated.

## *Safety*

Urinary ascites was reported in 38% (5/13) of fetuses undergoing cystoscopy and either hydro-ablation or guide-wire probing in one case series, requiring prenatal aspiration in 8% (1/13) of fetuses[1]. Another case series of 13 fetuses perorted that unintended small perforation of the fetal bladder was noted during cystoscopy in 9% (1/11) of fetuses that were receiving guide-wire cannulation of the urethra[2].

In 3 case reports detailing 4 patients, premature rupture of membranes occurred in 1 pregnancy on the third post-procedural day. This was treated with an amniopatch but fetal death occurred 3 days later[4].

# Literature review

## *Rapid review of literature*

The medical literature was searched to identify studies and reviews relevant to fetal cystoscopy. Searches were conducted via the following databases, covering the period from their commencement to 14/06/06: Medline, PreMedline, EMBASE, Cochrane Library and other databases. Trial registries and the Internet were also searched. No language restriction was applied to the searches. (See Appendix C for details of search strategy.)

The following selection criteria (Table 1) were applied to the abstracts identified by the literature search. Where these criteria could not be determined from the abstracts the full paper was retrieved.

**Table 1 Inclusion criteria for identification of relevant studies**

| Characteristic | Criteria |
|---|---|
| Publication type | Clinical studies were included. Emphasis was placed on identifying good quality studies.<br>Abstracts were excluded where no clinical outcomes were reported, or where the paper was a review, editorial, laboratory or animal study. Conference abstracts were also excluded because of the difficulty of appraising methodology. |
| Patient | fetuses with suspected fetal bladder outflow obstruction |
| Intervention/test | Fetal cystoscopy |
| Outcome | Articles were retrieved if the abstract contained information relevant to the safety and/or efficacy. |
| Language | Non-English-language articles were excluded unless they were thought to add substantively to the English-language evidence base. |

## *List of studies included in the overview*

This overview is based on two case series[1,2] (n = 26 fetuses), and three case reports[3–5] (n = 4 fetuses).

Other studies that were considered to be relevant to the procedure but were not included in the main extraction table (table 2) have been listed in appendix A.

## *Existing reviews on this procedure*

There were no published reviews identified at the time of the literature search.

## *Related NICE guidance*

Below is a list of NICE guidance related to this procedure. Appendix B details the recommendations made in each piece of guidance listed below.

**Interventional procedures:**

**IPGXXX** Fetal vesico-amniotic shunt for lower urinary tract outflow obstruction (in progress)

**Technology appraisals:**

None applicable

**Clinical guidelines:**

None applicable

**Public health:**

None applicable

## Table 2 Summary of key efficacy and safety findings on fetal cystoscopy

Abbreviations used: YAG - yttrium aluminium garnet

| Study details | Key efficacy findings | Key safety findings | Comments |
|---|---|---|---|
| Welsh A (2003)[1]<br><br>**Case series**<br><br>UK<br><br>**n=13**<br><br>Study period: September 1997 to August 2002<br><br>Population: Fetuses with suspected lower urinary tract outflow obstruction, n=5 with gestation dependant urinary electrolyte levels indicative of poor prognosis. Male (fetuses) =100% , median gestational age =22 weeks.<br><br>Intervention: Fetal cystoscopy under local anaesthesia using a semi-rigid embryo-fetoscope. Diagnostic inspection using combined ultrasonic guidance and direct vision. Therapeutic intervention attempted in 10 cases, 4 procedures using valvular hydro-ablation to disrupt membranous valves, 9 procedures using a blunt ended guide-wire to gently probe the site of obstruction to disrupt valve leaflets. Persistent oligo/anhydramnios managed with vesico-amniotic shunting.<br><br>**Follow-up: 34 months maximum post-natal,**<br>Disclosure of interest: Authors supported by institute trust and a training fellowship. Support for equipment came from charitable foundations and funds. | **Diagnostic**<br>A good view of the fetal bladder was achieved in 92% (12/13) of fetuses. In the remaining fetus vision was hindered by a pre-existing blood clot.<br><br>Of the remaining 12 fetuses the bladder neck was visualised in 11 (92%), the upper urethra in 10 (83%), the posterior urethra was entered in 6 (50%), and the site of obstruction was visualised in 5 (42%).<br><br>Of the 13 cases suspected of having posterior urethral valves prior to cystoscopy, an alternative diagnosis was reached following cystoscopy in 15% (2/13) of fetuses, one fetus each of prune belly syndrome and urethral atresia, also confirmed post-natally<br><br>There was one false negative pre-procedural diagnosis of urethral atresia, not confirmed at cystoscopy.<br><br>**Operative success**<br>Successful hydro-ablation of valves was achieved in 25% (1/4) of fetuses, with unremarkable subsequent prenatal course, and improvement of upper urinary tract dilatation. The procedure was technically unsuccessful in 75% (3/4) fetuses and as a result the therapeutic modality was changed to guide-wire manipulation of obstruction.<br><br>Guide-wire treatment of posterior urethral valves was technically successful in 56% (5/9) fetuses.<br><br>Of 5 surviving treated fetuses 2 (40%) had acceptable renal function at final follow up. Overall normal renal function outcomes was reported in 63% (5/8) of surviving patients. | **Complications**<br>There were no immediate or long term maternal complications<br><br>Oligohydramnios after initial successful restoration of amniotic fluid volume for ten weeks occurred in 8% (1/13) of fetuses.<br><br>Complication — Rate<br>Fetal loss — 15% (2/13)<br>Urinary ascites — 38% (5/13)<br>(requiring prenatal aspiration) — 8% (1/13)<br>Miscarriage due to therapeutic intervention — 20% (2/10) | Initial experience at one centre.<br><br>Criteria for selection for therapeutic treatment not well defined, and may have varied across the study period.<br><br>No details of inclusion criteria stated. Cases may be those who failed shunting.<br><br>Not stated whether study participants were consecutive presentations with suspected posterior urethral valves.<br><br>Definitions of procedural success not well defined.<br><br>Few clinical outcomes are reported.<br><br>Reporting of outcomes for all cases and those for which some therapeutic intervention undertaken makes analysis confused. |

| Abbreviations used: YAG - yttrium aluminium garnet | | | |
|---|---|---|---|
| **Study details** | **Key efficacy findings** | **Key safety findings** | **Comments** |
| Quintero R A (1995)[2]<br><br>**Case series**<br><br>USA<br><br>**n=13**<br><br>Study period: not stated.<br><br>Population: Fetuses with ultrasound findings of lower obstructive uropathy.<br><br>Male = not stated, median gestational age = 20.5 weeks. Decreased amniotic fluid volume n= 7, good prognosis based on biochemical urinary parameters n=7.<br><br>Intervention: Fetal cystoscopy with a 0.7 mm endoscope through a 18 gauge needle at time of vesicocentesis, or 1.6 to 2.5 mm endoscope through a 10-guage trocar at time of shunt placement. A soft tip guide-wire was used to cannulate the urethra. Patients who met criteria for fetal therapy were offered vesico-amniotic shunting<br><br>**Follow-up: not stated**<br><br>Disclosure of interest: not stated | **Operative success**<br>Fetal cystoscopy or shunting could not be undertaken in 15% (2/13) of fetuses due to problems with trocar insertion and stabilisation of the fetal bladder.<br><br>**Diagnostic**<br>Dilated ureteral orifices were seen in four fetuses, two of which had ureteral webs at the ureterovesical junction.<br><br>The endoscopic appearance of the proximal urethra was in agreement with sonographic imaging in 91% (10/11) of fetuses. In one case a dilated urethra was found endoscopically which was not visible on sonograph.<br><br>The precise diagnosis of posterior urethral valves and urethral atresia could not be established due to difficulty in negotiating the posterior urethra.<br><br>**Therapeutic**<br>Urethral permeability was achieved during probing in one fetus (1/11) with complete bladder emptying<br><br>The urethra was successfully cannulated in 3 fetuses (3/11) two of whom had dilated urethral orifices. | A small perforation of the posterior fetal bladder was seen on endoscopy in one case (1/11) | A mixture of therapeutic interventions were utilised in this series of patients. The focus of the study report was not on the benefit of cystoscopy per se<br><br>It is not stated whether this was a consecutive cohort of patients or what selection criteria were used.<br><br>Patients in whom cystoscopy was not possible were excluded from further analysis<br><br>Not stated how many clinicians undertook the technique.<br><br>No differentiation in analysis of cystoscopy undertaken during vesicocentesis or shunt insertion<br><br>Authors note that endoscopic findings may help to assess neonatal outcome by differentiating between various disorders and enable a prognosis based on the specific disease entity |

| Abbreviations used: YAG - yttrium aluminium garnet | | | |
|---|---|---|---|
| **Study details** | **Key efficacy findings** | **Key safety findings** | **Comments** |
| Quintero R A (2000)[4]<br><br>**Case Report**<br><br>USA<br><br>**n=2**<br><br>Study period: Not stated.<br><br>Population: Two fetuses reportedly suffering from complicated lower obstructive uropathy<br><br>Male = not stated, gestational age at diagnosis = 17 to 20 weeks.<br><br>Intervention: Fetal cystoscopy and fetal hydrolaparoscopy with addition al therapeutic interventions – as described in efficacy findings<br><br>**Follow-up: 1 year maximum**<br><br>Disclosure of interest: not stated | **Fetus 1**<br>29-year old woman with fetal lower obstructive uropathy diagnosed at 20 weeks gestation.<br><br>Fetal ultrasonography showed bilateral hyperechogenic kidneys, bilateral pyelectasis of 6 mm, a 3cm left urinoma, and bilateral hydroureter. Dilated fetal bladder of 2.9 cm and bladder wall of 1 cm. Amniotic fluid volume normal<br><br>Therapy at gestational age of 24 weeks and 5 days. Under general anaesthesia, a 2.7 mm endoscope with monopolar electrode was passed into the fetal urethra and two short busrts of current at 20W were fired at the posterior urethral valves. Additionally a hydrolaparoscopic fetal cystotomy was performed. A defect of 0.5 cm was made in the dome of the bladder using a YAG laser and monopolar electrode resulting in adequate bladder opening. A peritoneoamniotic shunt was also inserted.<br><br>Spontaneous onset of labour at 33 weeks and delivery of a 3.072 kg live infant with Apgar score of 9 at 5 minutes, intact bladder wall, posterior urethral valves, and grade 5 reflux on the right.<br><br>**Fetus 2**<br>22-year old woman diagnosed at 17 weeks gestation.<br><br>Ultrasonography showed severe oligohydramnios, and mild megacystis with 2.9 cm bladder diameter, and dilated urethra of 8.9 mm. Findings suggested posterior urethral valves with iatrogenic urinary ascites.<br><br>Therapy at gestation age of 18 weeks and 3 days. Under general anaesthesia a fetal hydrolaparoscopy was performed with a 2.7 mm endoscope. A fetal cystotomy performed wit a YAG laser fibre. The endoscope was advanced into the fetal bladder and into the urethra. Catheterisation of the urethra with a 0.025 inch wire was unsuccessful, ablation of the valves performed with YAG laser energy and a vesico-amniotic shunt inserted.<br>Premature rupture of membranes occurred on the third postoperative day, treated with amniopatch (intra-amniotic injection of platelets and cryoprecipitate). Fetal death occurred 3 days later. Autopsy showed absence of right kidney and adrenal gland, but a patent urethra. | As described in efficacy findings | It is unclear why these two cases were selected for publication.<br><br>Both cases also treated with shunting.<br><br>Operator experience not described.<br><br>Other treatment options discussed with mothers who consented to the cystoscopy guided therapy.<br><br>Authors state that further experience is required to establish its risks and benefits.<br><br>From demographic and clinical details provided it appears that these cases have not been reported in other papers by the same author. |

| Abbreviations used: YAG - yttrium aluminium garnet | | | |
|---|---|---|---|
| **Study details** | **Key efficacy findings** | **Key safety findings** | **Comments** |
| Quintero R A (2001)[5]<br><br>**Case report**<br><br>USA<br><br>**n=1**<br><br>Population: A fetus with fetal bladder obstruction caused by ureteroceles<br><br>Technique: Cystoscopic guided laser incision, under general anaesthesia of a cecoureterocele, using a YAG laser.<br><br>**Follow-up:**<br><br>Disclosure of interest: not stated | 27 year old woman, with bladder outlet obstruction diagnosed at 19 weeks and 6 days gestation. Ultrasound scanning revealed a right hydrouter, and a dilated ureterovesical junction of 9mm and megacystis of 3.7 cm. The right kidney was hyperchongenic, and the amniotic fluid index was 8.7.<br><br>**Operative success**<br>The ureterocele was excised without complication<br><br>The bladder size decreased from 6.4 cm preoperatively to 3 cm at 24 hours, and 1.5 cm at 5 weeks.<br><br>The right ureterovesical junction size was reduced from 1.3 cm to 0.68 cm following the procedure.<br><br>**Post-natal outcomes**<br>Spontaneous delivery of a healthy 2.835Kg infant occurred at 36 weeks and 6 days.<br><br>The infant had a non-functioning right kidney, and underwent a nephrectomy and is doing well at last follow up.<br><br>Pulmonary hypoplasia from oligohydramnios was avoided. | None reported | No details given of selection of this case for publication<br><br>Other treatment options attempted are not described<br><br>Length of final follow up not described.<br><br>Operator experience is not known.<br><br>From demographic and clinical details provided it appears that this case has not been reported in other papers by the same author. |

| Abbreviations used: YAG - yttrium aluminium garnet | | | |
|---|---|---|---|
| **Study details** | **Key efficacy findings** | **Key safety findings** | **Comments** |
| Quintero R A (1995)[3]<br><br>**Case report**<br><br>USA<br><br>**n=1**<br><br>Fetal lower urinary tract obstruction<br><br>A male fetus, gestational age at diagnosis = 19 weeks.<br><br>Fetal cystoscopy with fibre-optic endoscope and electro-coagulation of posterior urethral valves.<br><br>**Follow up = 4 days.**<br><br>Disclosure of interest: Not stated | 32 year old woman with fetal lower obstructive uropathy diagnosed at 19 weeks gestation.<br><br>Ultrasonography showed distended bladder, dilated proximal urethra (7 mm), bilateral hydroureters, and bilateral pyelectasis (7 mm). Also fetal ascites, bilateral pleural effusions, and oligohydramnios. Serial vesicocenteses were performed and endoscopy with a 0.7 mm endoscope through a 18 gauge needle confirmed posterior urethral valves.<br><br>Therapy at 22 weeks gestation. Under general anaesthesia, a 2.5 mm endoscope was directed to the bladder neck and urethra. Valves were electro-coagulated with a ball tip monopolar flexible electrode with current of 20W. Axial rotation of the endoscope allowed complete fulguration of the valves.<br><br>Ultrasonographic assessment showed passage of fluid through the patent urethra into the amniotic cavity. The procedure lasted 2 hours. The mother was discharged at 48 hours.<br><br>Repeated ultrasonography showed resolution of the megacystis, thinning of bladder walls, mild pyelectasis (7 mm), persistent bilateral hydroureters, and oligohydramnios. Preterm labour at 31 weeks, delivery of a 2.0Kg fetus with Apgar scores of 5 at 1 minute and 1 at 5 minutes, and renal failure and hypoplasia. The urethra was patent, but there was a 3mm abdominal wall defect with omental herniation at site of trocar insertion.<br><br>The neonate died of pulmonary hypoplasia on day 4 after delivery. | As described in efficacy findings | It is unclear why this case was selected for publication.<br><br>Authors state that cystoscopy undertaken at the same time as diagnostic vesicocentesis so will not pose any additional risks to standard assessment of renal function.<br><br>Serial vesicocentesis were also performed.<br><br>From demographic and clinical details provided it appears that this case has not been reported in other papers by the same author. |

### *Validity and generalisability of the studies*

- All patients reported in the literature were treated in 2 specialist centres
- There is significant variation in therapeutic techniques both between and within case series.
- Limited long term clinical follow up data available.
- Potential duplicate reporting of patients.
- No standardisation / validation of outcome measures utilised in studies

## Specialist advisors' opinions

*Specialist advice was sought from consultants who have been nominated or ratified by their Specialist Society or Royal College.*

Dr S Cooper, Prof. M Kilby, Mr N Madden.

- Cystoscopy guided interventions may help to prevent pulmonary hypoplasia secondary to oligohydramnios and reduce the incidence of chronic renal impairment in infancy.
- The potential benefits of fetal cystoscopy are that it could help in selecting appropriate cases and guide vesico-amniotic shunting.
- All advisors considered the procedure to be novel and of uncertain safety and efficacy.
- The procedure is sometimes undertaken jointly by urologists and fetal medicine specialists.
- Adverse events in published literature and known anecdotally include, miscarriage, preterm delivery, urinary ascites, damage to anterior abdominal wall, and bladder damage.
- Additional theoretical adverse events may include premature rupture of membranes, and maternal infection.
- Fetuses to be considered for the procedure may demonstrate a range of presentations, and disease severity.
- Only two clinicians are undertaking the procedure worldwide.
- The procedure requires subspecialty training, requires good quality ultrasound equipment and experience in ultrasound-guided fetal procedures. Parents should be offered a full counselling service.
- If considered safe and efficacious the procedure would only be used in specialist centres in the UK.
- Audit criteria recommended by advisors include complication rate of shunting guided by cystoscopy, renal function at birth and long term, perinatal mortality, miscarriage, premature rupture of membranes, intrauterine death, fetal hydrops, urinary ascites, iatrogenic gastroschisis.

## Issues for consideration by IPAC

- None of the three specialist advisors have undertaken the procedure.
- Cystoscopy can be used as a diagnostic tool, or as an imaging aid to guide therapeutic interventions

# References

1. Welsh A, Agarwal S, Kumar S et al. (2003) Fetal cystoscopy in the management of fetal obstructive uropathy: experience in a single European centre [see comment]. *Prenatal Diagnosis* 23: 1033–41.
2. Quintero RA, Johnson MP, Romero R et al. (1995) In-utero percutaneous cystoscopy in the management of fetal lower obstructive uropathy. *Lancet* 346: 537–40.
3. Quintero RA, Hume R, Smith C et al. (1995) Percutaneous fetal cystoscopy and endoscopic fulguration of posterior urethral valves [see comment]. *American Journal of Obstetrics and Gynecology* 172: 206–9.
4. Quintero RA, Morales WJ, Allen MH et al. (2000) Fetal hydrolaparoscopy and endoscopic cystotomy in complicated cases of lower urinary tract obstruction. *American Journal of Obstetrics and Gynecology* 183: 324–30.
5. Quintero RA, Homsy Y, Bornick PW et al. (2001) In-utero treatment of fetal bladder-outlet obstruction by a ureterocele. *Lancet* 357: 1947–8.

# Appendix A: Additional papers on fetal cystoscopy for diagnosis and treatment of lower urinary outflow tract obstruction not included in summary table 2

The following table outlines the studies that are considered potentially relevant to the overview but were not included in the main data extraction table (Table 2). It is by no means an exhaustive list of potentially relevant studies.

| **Article title** | **Number of patients/ follow-up** | **Direction of conclusions** | **Reasons for non-inclusion in Table 2** |
|---|---|---|---|
| Agarwal SK, Fisk N, Welsh A. (1999) Endoscopic management of fetal obstructive uropathy. *Journal of Urology* 161: 108. | Case series<br>n = 7<br>FU = ? | Cystoscopy confirmed posterior urethral valves in 5 fetuses.<br>Therapeutic intervention enabled complete resolution in 1 fetus and partial resolution in 2. | Same cases as included in Welsh et al. (2003)[1] in table 2. |
| Hofmann R, Becker T, Meyer-Wittkopf M et al. (2004) Fetoscopic placement of a transurethral stent for intrauterine obstructive uropathy. *Journal of Urology* 171: 384–6 | Case report<br>n = 1<br>FU = ? | ? | Full study report not available. |

# Appendix B: Related published NICE guidance for fetal cystoscopy for diagnosis and treatment of lower urinary outflow tract obstruction

| Guidance programme | Recommendation |
|---|---|
| Interventional procedures | **IPGXXX** Fetal vesico-amniotic shunt for lower urinary tract outflow obstruction (in progress)<br><br>Current evidence on the safety and efficacy of fetal vesico-amniotic shunt for lower urinary tract outflow obstruction does not appear adequate for this procedure to be used without special arrangements for consent and for audit or research<br><br>Clinicians wishing to undertake fetal vesico-amniotic shunt for lower urinary tract outflow obstruction should take the following actions.<br><br>Inform the clinical governance leads in their trusts.<br><br>Ensure that parents understand the uncertainty about the procedure's safety and efficacy and provide them with clear written information. In addition, use of the Institute's Information for the public is recommended (available from www.nice.org.uk/IPGXXXpublicinfo).<br><br>Audit and review clinical outcomes of all patients having fetal vesico-amniotic shunt for lower urinary tract outflow obstruction<br><br>This procedure should only be performed in centres specialising in invasive fetal medicine and in the context of a multidisciplinary team, which may include a consultant in fetal medicine, a paediatric urologist, a neonatologist and a specialist midwife<br><br>Publication of safety and efficacy outcomes will be useful. A randomised trial (PLUTO), comparing fetal vesico-amniotic shunt with no treatment, is in progress. There is also a registry linked to the trial. Clinicians are encouraged to enter patients into this trial or into the registry. The Institute may review the procedure upon publication of further evidence |
| Technology appraisals | None applicable |
| Clinical guidelines | None applicable |
| Public health | None applicable |

# Appendix C: Literature search for fetal cystoscopy for diagnosis and treatment of lower urinary outflow tract obstruction

| **IP:** 331 Fetal cystoscopy | | |
|---|---|---|
| **Database** | **Version searched** | **Date searched** |
| Cochrane Library | Issue 2, 2006 | 13/6/06 |
| CRD databases | – | 14/6/06 |
| Embase | 1980 to 2006 Week 23 | 13/6/06 |
| Medline | 1966 to May Week 5 2006 | 13/6/06 |
| PreMedline | 9 June 2006 | 13/6/06 |
| CINAHL | 1982 to June Week 2 2006 | 14/6/06 |
| British Library Inside Conferences | – | 14/6/06 |
| NRR | Issue 2, 2006 | 14/6/06 |
| Controlled Trials Registry | – | 14/6/06 |

The following search strategy was used to identify papers in Medline. A similar strategy was used to identify papers in other databases.

1 fetus/
2 (fet$ or foet$ or utero$ or inutero$ or intrauterine).tw.
3 (antenatal$ or prenatal$).tw.
4 fetal diseases/
5 or/1-4
6 cystoscopy/
7 cystoscopes/
8 cystoscop$.tw.
9 cystourethroscop$.tw.
10 cystostomy/
11 cystostom$.tw.
12 or/6-11
13 (obstruct$ adj3 uropath$).tw.
14 (urin$ tract$ adj3 (disorder$ or obstruct$ or block$ or stenos$)).tw.
15 ((bladder or urethra$) adj3 (disorder$ or obstruct$ or block$ or stenos$)).tw.
16 exp urethral obstruction/
17 bladder neck obstruction/
18 or/13-17
19 5 and 12 and 18