Original Study

Complication Rates Associated with Levonorgestrel Intrauterine System Use in Adolescents with Developmental Disabilities

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A B S T R A C T

Study Objective: To assess the complication rates with the use of the levonorgestrel intrauterine system (LNG IUS) in adolescents with developmental disabilities.
Design: Retrospective chart review of all adolescents with developmental disabilities taken to the operating room for LNG IUS insertion between January 2000 and July 2009 at the Royal Children's Hospital, Melbourne, Australia. Cases identified from the surgical database, and medical records reviewed.
Main Outcome Measures: Complication rates with LNG IUS use in adolescents with development disabilities: non-insertion, uterine perforation, infection, and expulsion.
Results: Fifty-six adolescents with developmental disabilities had an attempted LNG IUS insertion. The average age at insertion was 15.6 years (range 10.5-21.5 y). The LNG IUS was used as first line therapy in 14 cases (25%). Pre-insertion ultrasonography was ordered in 48% of cases, out of which 5 cases had uterine lengths <6 cm. Despite this, 4 of these cases had successful insertions. Two insertion attempts were abandoned intra-operatively (3.6%); one due to inadequate uterine length of 4 cm, and the other due to anatomic distortion. One spontaneous expulsion occurred at approximately 5 months (1.9%). Four IUDs were removed prematurely (7.4% withdrawal rate); 1 for persistent abdominal pain, 1 for irregular bleeding, and 2 for suspected malpositions. There were no documented cases of infection, perforation, or pregnancy.
Conclusion: Our experience in this population has been very positive and confirms that complication rates are comparable to that in adults.
Key Words: Levonorgestrel intrauterine system (LNG IUS), Intrauterine device (IUD), Mirena, Adolescents, Disability, Menstrual management, Expulsion, Ultrasonography, Uterine length

Introduction

Menstrual management for adolescents with developmental disabilities has evolved over the years as new options have become available. The levonorgestrel-releasing intrauterine system (LNG IUS) has been associated with an approximate 90% reduction in menstrual blood loss, a 20% amenorrhea rate at 1 year, reduction in menstrual cramps, and 99% contraceptive efficacy.[1–4] The non-contraceptive benefits have allowed the LNG IUS to join the oral contraceptive pill and depo-medroxyprogesterone acetate as an option for these young women. Few studies however have specifically reviewed the use of the LNG IUS in this patient population. We present here the largest case series, reviewing the use of the LNG IUS at the Royal Children's Hospital (RCH), Melbourne, between January 2000 and July 2009, focusing on the feasibility and complication rates of LNG IUS use in this patient population.

Methods

This is a retrospective chart review of all adolescents with developmental disabilities taken to the operating room for insertion of an LNG IUS, (Mirena, Bayer Schering Pharma Ag) between January 2000 and July 2009 at RCH. RCH Human Research Ethics Committee approval was received on the basis of a clinical audit.

All insertions of the LNG IUS at RCH are performed under general anesthesia. Cases were therefore identified from the RCH surgical database by searching for procedures coded as intrauterine device insertion. This list of cases was then cross-matched with physicians' clinical case records, allowing an additional case to be identified with an attempted but failed insertion coded simply as an examination under anesthesia in the surgical database. Medical records (including clinic visits prior to and after insertion and operative notes) for all cases were reviewed. Patients without developmental disabilities were excluded.

Results

Demographics

Fifty-six adolescents had an attempted LNG IUS insertion. The average age at the time of presentation to clinic was 14.3 years, ranging from 10 to 19 years. The average age of menarche was 12.6 years (range 8-18 years). Five patients were premenarchal at the first consultation, but all subjects were post-menarchal at the time of IUD insertion. The average age at the time of LNG IUS insertion was 15.6 years (range 10.5-21.5 years). There was an average interval from

The authors indicate no conflicts of interest.

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1083-3188/$ - see front matter
http://dx.doi.org/10.1016/j.jpag.2013.08.010

initial presentation to LNG IUS insertion of 18 months, ranging from 0 to 71 months.

Follow-up after insertion of IUD ranged from 0 to 51 months (on average 15 months) were 5 cases were not followed-up at RCH but rather in private offices.

Medical History

Fifty-four of the patients had varying degrees and causes of intellectual disability, including Trisomy 21, Williams syndrome, Bardet-Biedl syndrome, Sturge-Weber syndrome, 18p deletion syndrome, Rett syndrome, autism, and acquired brain injuries. Two patients had physical disabilities, 1 due to Osteogenesis Imperfecta (type 3) and the other due to congenital disorder of glycosylation type 1a.

Gynecologic History

Two patients were reported to be sexually active prior to LNG IUS insertion. There were 3 additional cases with previous histories of alleged sexual abuse. All patients were nulligravid, and none reported any history of sexually transmitted infections. One patient had urinary PCR for Chlamydia and Gonorrhoea testing prior to IUD insertion, which were negative.

Indications for LNG IUS use included complete menstrual suppression (82%), management of menorrhagia (20%) or dysmenorrhea (9%), reduced burden of menstrual hygiene (24%), and contraception (22%). (Note that percentages do not total 100% as many charts identified more than 1 indication for use).

The LNG IUS was used as first line therapy in 14 cases (25%). Other methods of menstrual management used prior to LNG IUS insertion included NSAIDs (29%), tranexamic acid (11%), oral contraceptive pill (61%) with 71% of these using an extended or continuous regimen, oral progestogens (16%), intramuscular depo-medroxyprogesterone acetate (DMPA, 11%), and etonorgestrel implant (2%). These percentages do not total 100% as many patients tried several therapies before proceeding with the LNG IUS (34% using 1, 25% using two, 11% using 3, and 5% using 4 prior treatments).

Operative Findings

Recorded uterine length from intra-operative sounding ranged from 4 to 10 cm (mean 7.4 cm). Three cases had uterine lengths less than 6 cm on sounding (see Table 1). Two of these cases had successful LNG IUS insertion despite uterine lengths of 5 cm and 5.5 cm, but insertion was not attempted in the case of a 4-cm cavity.

Overall, 2 cases did not have a LNG IUS inserted; the first due to inadequate uterine length (as described above), and the second due to extreme ante-version/flexion of the uterus and a distorted bony pelvis secondary to osteogenesis imperfecta, which made accessing the cervix impossible.

One file reported difficulty with deployment of the LNG IUS device on the first attempt, with successful placement on the second.

Table 1
Patient Details and Indication for Surgery

Ultrasonography		Surgery		LNG IUS Insertion
Date	Uterine Length (cm)	Date	Uterine Length (cm)	
1/29/08	9	3/25/08	5	Successful
None	None	7/23/07	5.5	Successful
2/26/03	5.3	5/16/03	4	Abandoned
8/8/07	5.3	9/12/07	7	Successful
3/28/08	5.8	5/21/08	7	Successful
6/30/08	5.9	8/13/08	6	Successful
7/19/08	4	1/28/09	6.5	Successful

A single case was complicated by a hymenal tear, requiring a simple suture for hemostasis, and no cases reported any cervical lacerations, uterine perforations, or other intra-operative complications.

All patients were discharged home on the same day of the procedure.

Ultrasonography

Twenty-seven patients (48%) had transabdominal pelvic ultrasonography (US) prior to attempted insertion. Measured uterine length ranged from 4 to 9 cm (mean 6.9 cm). Five cases had measured uterine lengths of less than 6 cm (see Table 1). There was no recorded intentional delay in attempted LNG IUS insertion in any case. Four of these cases had successful LNG IUS insertion and 1 insertion was abandoned after the cavity was sounded at 4 cm (as discussed above).

Complications

One spontaneous expulsion was recorded (1/54 insertions, 1.9%) having occurred at approximately 5 months. The recorded uterine length for this case on pre-insertion US was 8.3 cm and on intraoperative sounding was 7 cm. See Table 2.

Four LNG IUS were removed prematurely (4/54, 7.4% withdrawal rate); 1 persistent abdominal pain at 34 months (with ongoing abdominal pain after IUD removal), 1 unacceptable irregular bleeding at 7 months, and 2 suspected malpositions (presenting with irregular bleeding and IUD found to be in the lower uterine segment on US) at 5 months and 33 months each.

No uterine perforation, infections, or pregnancies were reported.

Table 2
Complications in 54 Insertions

Type	n (%)
Spontaneous expulsion	1 (2)
Early Removal	4 (7)
Abdominal pain	1
Unacceptable BTB	1
BTB + malposition on ultrasonography	2
Perforation	0 (0)
Contraceptive failure	0 (0)
Infection & pelvic inflammatory disease	0 (0)

BTB, Breakthrough bleeding.