

Original Article

A 10-year Review of the Clinical Presentation and Treatment Outcome of Asherman's Syndrome at a Center with Limited Resources

Takai IU, Kwayabura AS¹, Ugwa EA², Idrissa A³, Obed JY³, Bukar M³

Department of Obstetrics and Gynecology, Aminu Kano Teaching Hospital, Kano, Kano State, ¹Department of Obstetrics and Gynecology, State Specialist Hospital, ³Department of Obstetrics and Gynecology, University of Maiduguri Teaching Hospital, Maiduguri, Borno State, ²Department of Obstetrics and Gynecology, Federal Medical Centre, Birnin Kudu, Jigawa State, Nigeria

Address for correspondence:

Dr. Idris Usman Takai,
Department of Obstetrics and
Gynecology, Aminu Kano Teaching
Hospital, Kano, PMB 3452,
Kano State, Nigeria.
E-mail: takaiidris@yahoo.co.uk

Abstract

Background: Many women suffer from some degree of intrauterine adhesions (IUAs) presenting with various clinical symptoms and signs. Hysteroscopy is the mainstay of diagnosis, classification, and treatment of the IUA. **Aim:** This study was undertaken to review the clinical features and treatment outcome in patients diagnosed with Asherman's syndrome at the University of Maiduguri Teaching Hospital (UMTH), Maiduguri, over a 10 years period, 1997–2006. **Subjects and Methods:** This is a retrospective study of cases of Asherman's syndrome managed at the UMTH over a 10-year period, from January 1, 1997 to December 31, 2006. Case records of the patients were retrieved from medical records' Department. Sociodemographic and clinical information relating to clinical presentations, treatment modalities, and outcomes were collated. The data were analyzed using SPSS 16.0 Statistical Computer Package (SPSS Inc., IL, USA 2006). Chi-square and binary logistic regression were used for inferential statistics. **Results:** Asherman's syndrome constituted 8.1% (81/996) of all gynecological operations in UMTH during the study period. The case records retrieval rate was 96.3% (78/81 folders). Most of the patients, 59% (46/78) were in their third decade and majority 85.9% (67/78) were married. The most common risk factor was pregnancy-associated, accounting for 61.5% (48/78). Infertility and hypomenorrhea were the most common mode of presentations in 55.1% (43/78) and 32.1% (25/78) of cases, respectively. Most of the patients 85.9% (67/78) were treated by blind dilatation and curettage (D/C), Foley's catheter insertion and estrogen-progesterone combination. Correction of menses was seen in 37.2% (29/78) of the patients while the pregnancy rate was 32.1% (25/78). On binary logistic regression age of the respondents, multigravidity, and previous pelvic surgeries for pregnancy (C/S and D/C for abortion) emerged as the only respondent's related risk factors associated with the development of Asherman's syndrome. **Conclusion:** Asherman's syndrome is relatively common due to complications of pregnancy and delivery, and blind D/C has a relatively poor outcome. Age of the respondents, multigravidity, and previous pelvic surgeries for pregnancy (C/S and D/C for abortion) were associated with the development of Asherman's syndrome. Therefore, other methods of adhesiolysis such as hysteroscopic adhesiolysis should be explored.

Keywords: Asherman's syndrome, Clinical presentation, Maiduguri, Treatment outcome

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: ???

Access this article online	
Quick Response Code:	Website: www.amhsr.org
	DOI: *****

Introduction

Intrauterine adhesions (IUA) known as Asherman's syndrome results from trauma to the basal layer of the endometrium.^[1-3] It most commonly results from curettage of a recently pregnant uterus.^[4] The lesions range from minor to severe adhesions that may affect menstrual function and fertility of the woman. Hysteroscopy is the mainstay of diagnosis, classification, and treatment of the IUA.^[2-5] Severe forms may require multiple hysteroscopic adhesiolysis to achieve a satisfactory anatomical and functional result.^[2-5]

In 1894, Fritsch^[1] was the first to report on a case of total obliteration of the uterine cavity after a postpartum curettage. Thereafter, Asherman published reports in 1948 and 1950 on 94 additional cases.^[2,3] The exact pathophysiologic origin of IUA remains unclear. However, pregnancy remains the most frequently mentioned event preceding the development of Asherman's syndrome^[4-7] and it may follow vaginal delivery, cesarean section, and first and second trimester abortions.^[4,7] Other probable and possible predisposing and causative factors of Asherman's syndrome include abnormal decidual development, distorted placentation, placenta previa, placenta accrete, defective placental site involution, congenital Mullerian tract anomalies, DES exposure,^[8] embolization of uterine arteries, and endometrial ablation.^[2-5]

The majority of the patients with IUAs present with menstrual abnormalities, usually hypomenorrhea or secondary amenorrhoea.^[9] Others may have relatively normal menses and in which case a high index of suspicion is needed to make diagnosis.^[10] Hysterosalpingography (HSG) remains the most common method of diagnosis.^[11,12] Most of the cases in University of Maiduguri Teaching Hospital (UMTH) were diagnosed by HSG. Other methods of diagnosis include hysteroscopy, saline infusion sonography, three-dimensional ultrasound scanning and magnetic resonance imaging.^[13-17] Dilatation and curettage (D/C) was widely used before the widespread use of hysteroscopy, and reported results in a previous study included return to normal menses in 1049 of 1250 women (84%), conception in 559 of 1049 women (53%), miscarriages in 142 of 559 pregnancies (25%), term delivery in 306 of 559 pregnancies (55%), premature delivery in 50 of 559 pregnancies (9%), and 42 of 559 pregnancies (8%) complicated by placenta accreta.^[18]

The use of a Foley catheter for 3–10 days after surgical lysis of IUAs is similarly reported to act as a physical intrauterine barrier.^[19-24] A nonrandomized study compared the use of an inflated pediatric Foley catheter in place for 10 days postoperatively in 59 patients with that of an intrauterine device (IUD) *in situ* for 3 months in 51 patients.^[25] There were fewer infections in the Foley group and a lower recurrence rate of IUAs as assessed using HSG.^[25] Although amenorrhea continued in 19% of women in the Foley group and 38% in the IUD group, the fertility rate was relatively low in both groups:

20 of 59 (34%) and 14 of 51 (28%), respectively. In a study of 25 women with moderate to severe IUAs, use of a fresh amnion graft over an inflated Foley catheter prevented recurrence of IUAs in 52% of women although follow-up fertility data and complications are not reported.^[24] Postoperative treatment with estrogen therapy (a daily oral dose of 2.5 mg conjugated equine estrogen with or without opposing progestin for 2 or 3 cycles) has been advocated by various authors.^[26-28] This study was undertaken to assess the prevalence of Asherman's syndrome at the UMTH, mode of presentation and outcome of treatment using blind D/C. The findings will be a basis for recommendation for the hospital management to acquire better machines such as the hysteroscope for diagnosis and treatment of Asherman's syndrome in our center.

Subjects and Methods

This is a retrospective study of cases of Asherman's syndrome seen and treated at the UMTH, Maiduguri, Borno State, Nigeria over a 10-year period; from January 1, 1997 to December, 31, 2006. Ethical approval was obtained from Health Research Ethics Committee of UMTH. The theater records for all cases of IUA treated over the study period were compiled, and the case notes retrieved from the medical records department and relevant data for the study was extracted. Diagnosis was made using HSG and treatment was by blind D/C, insertion of Pediatrics Foley's catheter and administration of combined estrogen/progesterone therapy (conjugated equine estrogen 0.625 mg daily for 21 days and thereafter norethisterone acetate 10 mg daily for 7 days). Lippes loop was used in a few patients when available. The procedure was done after obtaining consent. Preoperative assessments were also found to be satisfactory before the procedure. Under general anesthesia and in lithotomy position, routine cleaning and draping were done. Sequential uterine dilatation was done using Hegar's dilators up to 8–10 mm. Postoperative conditions were satisfactory. Information on age, parity, clinical presentation, diagnostic modality, predisposing factors, treatment modality, and outcome were extracted. Main outcome measures were return to normal menses, conception, miscarriages in pregnancies, term delivery and premature delivery. Patients were followed-up for 2 years, and those who could not be followed-up were excluded from the study. The data were analyzed using SPSS 16.0 Statistical Computer Package (SPSS Inc., IL, USA, 2006). The Chi-square was used for bivariate analysis, and binary logistic regression was used to determine risk factors associated with the development of Asherman's syndrome. A $P < 0.05$ was considered as statistically significant. The results were presented by simple statistical tables.

Results

There were 996 gynecological operations during the period under study, out of which 81 were for Asherman's syndrome. Therefore, 8.1% of gynecological surgeries done were for

Asherman's Syndrome. Seventy-eight of the folders were retrieved and analyzed, giving a retrieval rate of 96.3%. The sociodemographic factors studied are presented in Table 1. The age of the patients ranged between 18 and 42 years, with most 46/78 (59%) in their third decade; only 12/78 (15.4%) were below 20 years while 6/78 (7.7%) were aged 40 years and above. There were 9/78 (11.8%) unmarried women; 2/78 (2.6%) were divorced while the majority 67/78 (85.9%) of the patients were married and up to 62/78 (79.5%) of them were having more than one delivery. Almost 3/4 of the patients, 59/78 (71.8%) had primary school education; 14/78 (17.9%) had secondary education, 6/78 (7.7%) had tertiary education, while the remaining 2/78 (2.6%) had no formal education.

The risk factors associated with Asherman's syndrome are shown in Table 2. The commonest risk factor was pregnancy-associated, accounting for 48/78 (61.5%), of which 21/78 (26.9%) followed cesarean section, 13/78 (16.7%) were due to puerperal infection while 14/78 (17.9%) were due to D/C for abortion and its complications. Myomectomy was responsible for 14/78 (17.9%) of cases, pelvic inflammatory disease for 5/78 (6.4%) and D/C for infertility 8/78 (10.3%); while 3/78 (3.9%) was due to unspecified causes.

This study observed that age of the respondents (25–29 years), marital status (married), having at least secondary school level of education, multigravidity, previous cesarean section, puerperal infection, D/C for abortion, and D/C for infertility were significantly associated with the development of Asherman's syndrome. On binary logistic regression in a model consisting of these variables, age of the respondents, multigravidity, and previous pelvic surgeries for pregnancy (C/S and D/C for abortion) emerged as the only respondent's related risk factors associated with the development of Asherman's syndrome in this study [Table 3].

Table 4 shows the clinical presentations of Asherman's syndrome. Infertility and hypomenorrhea were the commonest mode of presentations in 43/78 (55.1%) and 25/78 (32.1%) of cases respectively, amenorrhea and infertility in 7/78 (9.0%) and oligomenorrhea 3/78 (3.8%). Adhesiolysis and Foley's catheter insertion with estrogen-progesterone combination were the most frequent treatment modality in 67/78 (85.9%) of the patients. The remaining 11/78 (14.1%) had Lippes' loop insertion.

Correction of menses was seen in 29/78 (37.2%) of the patients; the pregnancy rate was 32.1% (25/78); while 21/78 (26.9%) had no change from the treatment. Only in 3.8% (3/78) of the patients was there worsening of symptoms. These are presented in Table 5.

Discussion

The study evaluated the incidence, clinical presentation and treatment modalities and outcome of patients presenting with

Table 1: Sociodemographic characteristics of the patients studied

Characteristics	n (%)
Age (years)	
≤ 19	12 (15.4)
20-24	15 (19.2)
25-29	19 (24.4)
30-34	12 (15.4)
35-39	14 (17.9)
≥ 40	6 (7.7)
Total	78 (100)
Parity	
1	16 (20.5)
2-4	34 (43.6)
≥ 5	28 (35.9)
Total	78 (100)
Marital status	
Married	67 (85.9)
Single	9 (11.5)
Divorced	2 (2.6)
Total	78 (100)
Educational status	
None	2 (2.6)
Primary	56 (71.8)
Secondary	14 (17.9)
Tertiary	6 (7.7)
Total	78 (100)

Table 2: Risk factors associated with Asherman's syndrome

Risk factor	n (%)
Cesarean section	21 (26.9)
Puerperal infection	13 (16.7)
D/C for abortion	14 (17.9)
Myomectomy	14 (17.9)
PID	5 (6.4)
D/C for infertility	8 (10.3)
Unspecified	3 (3.9)
Total	78 (100)

PID: Pelvic inflammatory disease, D/C: Dilatation and curettage

Asherman's syndrome at the UMTH Maiduguri, North-Eastern part of Nigeria. Though the true incidence of IUAs is difficult to establish, the condition is rare in the general population and often asymptomatic. The 8.1% of gynecological surgeries done for Asherman's Syndrome in our study lies within a reported estimated range of 1.5% as an incidental finding at HSG to 21.5% of women with a history of postpartum uterine curettage.^[29,30] The findings on age distribution among the patients studied agree well with previous reports where the majority of their patients were as well in their third decades.^[10,28,31] This group of patients may exhibit better health seeking behavior than their counterpart in the extreme of ages for one reason or the other.

The most common risk factor associated with IUAs in this study was pregnancy-associated, accounting for 61.5%. This

Table 3: Bivariate and binary logistic regression results for Asherman's syndrome

Characteristics	Bivariate		Binary logistic regression	
	n (%)	Statistical test (P)	Z test (P)	OR (95% CI)
Age (25-29 years)	19 (24.4)	$\chi^2=3.67$ (0.002)	1.72 (0.030)	5.22 (1.20-7.19)
Marital status	67 (85.9)	$\chi^2=5.09$ (0.045)	2.11 (0.149)	
Having at least secondary education	56 (71.8)	$\chi^2=6.80$ (0.018)	2.57 (0.101)	
Multigravidity	34 (43.6)	$\chi^2=6.07$ (0.009)	2.20 (0.014)	2.77 (1.03-6.11)
Previous C/S	21 (26.9)	$\chi^2=4.72$ (0.004)	1.41 (0.018)	3.06 (1.30-5.16)
Puerperal infection	13 (16.7)	$\chi^2=2.98$ (0.038)	1.13 (0.070)	
D/C for abortion	14 (17.9)	$\chi^2=2.04$ (0.001)	1.11 (0.003)	4.86 (1.57-7.36)
D/C for infertility	8 (10.3)	$\chi^2=1.98$ (0.041)	2.01 (0.125)	

D/C: Dilatation and curettage, OR: Odds ratio, CI: Confidence interval

Table 4: Clinical presentations of Asherman's syndrome in UMTH, Maiduguri

Clinical presentation	n (%)
2° infertility/hypomenorrhea	43 (55.1)
Hypomenorrhea	25 (32.1)
Amenorrhea and infertility	7 (9.0)
Oligomenorrhea	3 (3.8)
Total	78 (100)

UMTH: University of Maiduguri Teaching Hospital, 2°: Secondary

Table 5: Treatment outcome of Asherman's syndrome

Outcome	n (%)
Correction of menses	29 (37.2)
Achieved pregnancy	25 (32.1)
No change in condition	21 (26.9)
Worsening symptoms	3 (3.8)
Total	78 (100)

finding is in keeping with previous studies.^[4-7,9,10] The lesions range from minor to severe adhesions that may affect menstrual function and fertility of the woman.^[3-5]

Infertility was the commonest mode of presentation in up to 55.1% of our patients and 44.9% had associated menstrual irregularities. Studies from Lagos reported menstrual irregularity in form of hypomenorrhea as most common presentation.^[10,12]

Though blind D/C and Foley's catheter insertion is associated with high incidence of uterine perforation and low success rate,^[17] it was the treatment modality employed in most (85.9%) of our patients together with estrogen-progesterone combination. The remaining 14.1% had Lippe's loop insertion. We did not encounter any uterine perforation though our pregnancy outcome was poor when compared with as high as 45% reported in another study.^[11] This was probably because of unavailability of hysteroscope, as a gold standard tool used for the diagnosis and treatment of IUAs,^[16] at that time in our center. After controlling for confounders, some sociodemographic and reproductive characteristics of the respondents as shown in Table 3 were significantly associated with the development of Asherman's syndrome. This finding agrees with the finding from a study in Danish population.^[32]

In consonant with our study, many previous studies reported the use of blind D/C and Foley's catheter insertion together with postoperative use of estrogen-progesterone combination therapy with good results.^[18-24,26-28] Correction of menses was seen in 37.2% of our patients while the pregnancy rate was 32.1%. The results were comparable to that of a previous study that reported that the group treated with Foley's catheter showed conception rate of 34% and a lower recurrence rate of IUAs.^[25] Other researchers similarly reported intrauterine pregnancies rates ranging from 22% to 45% and live births range from 28% to 32%.^[11] Some studies reported better results including return to normal menses in 1049 of 1250 women (84%) and conception in 540 of 1052 women (51%).^[18]

Asherman's syndrome is relatively common due to complications of pregnancy and delivery, and blind D/C has a relatively poor outcome. This study is limited in the sense that it was retrospective and did not compare outcome of treatment with other methods of adhesiolysis. Therefore, other methods of adhesiolysis such as hysteroscopic adhesiolysis should be explored.

Acknowledgement

We thank the valuable contributions of Mrs. Grace Bwala in data collection.

Financial support and sponsorship

This research was funded by the authors.

Conflicts of interest

There are no conflicts of interest.

References

- Fritsch H. Ein fall von volligem schwund der gebarmutter hohle nach auskratzung. Zentralbl Gynaekol 1894;18:1337.
- Asherman JG. Amenorrhoea traumatica (atretica). J Obstet Gynaecol Br Emp 1948;55:23-30.
- Asherman JG. Traumatic intra-uterine adhesions. J Obstet Gynaecol Br Emp 1950;57:892-6.
- Netter AP, Musset R, Lambert A, Salomon Y. Traumatic uterine synechiae: A common cause of menstrual insufficiency,

- sterility, and abortion. *Am J Obstet Gynecol* 1956;71:368-75.
5. Bergman P. Traumatic intra-uterine lesions. *Acta Obstet Gynecol Scand* 1961;40 Suppl 4:1-39.
 6. Klein SM, García CR. Asherman's syndrome: A critique and current review. *Fertil Steril* 1973;24:722-35.
 7. Schenker JG, Margalioth EJ. Intrauterine adhesions: An updated appraisal. *Fertil Steril* 1982;37:593.
 8. March CM, Israel R. Gestational outcome following hysteroscopic lysis of adhesions. *Fertil Steril* 1981;36:455-9.
 9. Olarewaju RS, Otubu JA. Asherman's syndrome: Experience in Jos university teaching hospital. *Trop J Obstet Gynaecol* 1993;10:1.
 10. Ogedengbe OK, Ogunmokun AA. The trend of intrauterine adhesions in Lagos, Nigeria. *Trop J Obstet Gynaecol* 1999;16:57-9.
 11. Berman JM. Intrauterine adhesions. *Semin Reprod Med* 2008;26:349-55.
 12. Ogedengbe OK, Giwa-Osagie OF, Adedeji OF, Oyeyinka O. Intrauterine adhesions in Lagos, Nigeria. *J Obstet Gynaecol* 1991;11:134-6.
 13. March CM. Intrauterine adhesions. *Obstet Gynecol Clin North Am* 1995;22:491-505.
 14. Bacelar AC, Wilcock D, Powell M, Worthington BS. The value of MRI in the assessment of traumatic intra-uterine adhesions (Asherman's syndrome). *Clin Radiol* 1995;50:80-3.
 15. Sugimoto O. Diagnostic and therapeutic hysteroscopy for traumatic intrauterine adhesions. *Am J Obstet Gynecol* 1978;131:539-47.
 16. Fadare OO. Reproductive outcome following hysteroscopic adhesiolysis in patients with Asherman's syndrome. *World J Laparosc Surg* 2011;4:39-41.
 17. Schenker JG, Margalioth EJ. Intrauterine adhesions: An updated appraisal. *Fertil Steril* 1982;37:593-610.
 18. March CM, Israel R, March AD. Hysteroscopic management of intrauterine adhesions. *Am J Obstet Gynecol* 1978;130:653-7.
 19. Asherman JG. Traumatic intra-uterine adhesions. *Br J Obstet Gynecol* 1950;57:892-6.
 20. Karande V, Levrant S, Hoxsey R, Rinehart J, Gleicher N. Lysis of intrauterine adhesions using gynecoradiologic techniques. *Fertil Steril* 1997;68:658-62.
 21. Pabuçcu R, Atay V, Orhon E, Urman B, Ergün A. Hysteroscopic treatment of intrauterine adhesions is safe and effective in the restoration of normal menstruation and fertility. *Fertil Steril* 1997;68:1141-3.
 22. Yasmin H, Nasir A, Noorani KJ. Hysteroscopic management of Asherman's syndrome. *Pak Med Assoc* 2007;57:553-5.
 23. Amer MI, Abd-El-Maeboud KH. Amnion graft following hysteroscopic lysis of intrauterine adhesions. *J Obstet Gynaecol Res* 2006;32:559-66.
 24. Orhue AA, Aziken ME, Igbefoh JO. A comparison of two adjunctive treatments for intrauterine adhesions following lysis. *Int J Gynaecol Obstet* 2003;82:49-56.
 25. Kodaman PH, Arici A. Intra-uterine adhesions and fertility outcome: How to optimize success? *Curr Opin Obstet Gynecol* 2007;19:207-14.
 26. Broome JD, Vancaillie TG. Fluoroscopically guided hysteroscopic division of adhesions in severe Asherman syndrome. *Obstet Gynecol* 1999;93:1041-3.
 27. Thomson AJ, Abbott JA, Kingston A, Lenart M, Vancaillie TG. Fluoroscopically guided synechiolysis for patients with Asherman's syndrome: Menstrual and fertility outcomes. *Fertil Steril* 2007;87:405-10.
 28. Deans R, Abbott J. Review of intrauterine adhesions. *J Minim Invasive Gynecol* 2010;17:555-69.
 29. Hooker AB, Lemmers M, Thurkow AL, Heymans MW, Opmeer BC, Brölmann HA, *et al.* Systematic review and meta-analysis of intrauterine adhesions after miscarriage: Prevalence, risk factors and long-term reproductive outcome. *Hum Reprod Update* 2014;20:262-78.
 30. March CM. Asherman's syndrome. *Semin Reprod Med* 2011;29:83-94.
 31. Gaya SA, Adamu IS, Yakasai IA, Abubakar S. Review of intrauterine adhesiolysis at the Aminu Kano Teaching Hospital, Kano, Nigeria. *Ann Afr Med* 2012;11:65-9.
 32. Kjer JJ. Asherman syndrome in a Danish population. *Acta Obstet Gynecol Scand* 2014;93:425-7.