

A Study on Hysteroscopy as a Primary Diagnostic Modality in Patients of Abnormal Uterine Bleeding

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ABSTRACT

Background: Among women, abnormal uterine bleeding and infertility rates are rapidly increasing. The clinician generally prefers physical examination, methodical histopathology report to diagnose the pregnancy related disorders, systemic conditions and disease related to the genital tract. Diagnostic hysteroscopy is a precious contrivance to diagnose widespread disorders and diseases related to female genital tract and uterus, such as abnormal uterine bleeding since hysteroscopy assists to understand the mechanism for the regulation of normal cycle.

Methods: The study had been carried out in the Department of Obstetrics and Gynecology, Krishna Medical Center, Lucknow from September 2012 to July 2017. Total of 400 patients were included in this randomized study. The study allocated histopathologic analysis, diagnostic hysteroscopy, intervention with or without anesthesia and postoperative diagnosis of patients.

Results: Of all the cases, who underwent diagnostic hysteroscopy, about 44% of cases were normal and 56% of cases were found with various abnormalities. 22% of cases had endometrial hyperplasia, 11% of cases had an endometrial polyp, 10% of cases had submucous myoma and 9% of cases had atrophy. On observing the clinical presentation, 42% of cases had menorrhagia, 20% of cases had polymenorrhoea, 16% of cases had metorrhagia and 22% of cases had reported with postmenopausal bleeding. About 60% of diagnostic hysteroscopies were performed without anesthesia, however, an ascending trend was reported for general anesthesia. Primary infertility was reported in 44% of cases and 56% of cases were reported with secondary infertility.

Conclusion: Our study concluded that the patients with pregnancy-related disorders and disease related to the genital tract and uterus should first undergo diagnostic hysteroscopy to provide a diagnosis with high accuracy and specificity.

Key-words: Abnormal Uterine bleeding, Anesthesia, Diagnostic hysteroscopy, Infertility, Tamoxifen therapy

INTRODUCTION

Abnormal uterine bleeding (AUB) becomes a common gynecological problem encountered in the family practice setting, with complicated clinical presentations. A regular history, physical examination, and laboratory evaluation possibly enables a clinician to find out the causes of disorders related to fertility such as genital tract pathology, iatrogenic causes, as well as medications in women under childbearing age^[1].

A national study on mechanism of abnormal uterine bleeding reported those over a period of 10 years, menstrual disorder were observed in 19% of 20 million patient visits to a physician's clinic for gynecologic condition^[2]. Besides this, 25% surgeries at gynecologist clinic were done to treat abnormal uterine bleeding. Women experienced several changes in frequency of the menstrual period, duration of menstrual period, or quantity of flow, as well as bleeding among two cycles^[2,3]. The abnormal uterine bleeding in postmenopausal women, vaginal bleeding after 12 months or more of cessation of menses, and/or irregular bleeding in postmenopausal women who have been getting 12month^[4,5] or more than 12 month hormone therapy^[4,5]. The first contemplation is pregnancy for women of childbearing age facing AUB^[6]. The most possible

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reasons behind pregnancy-related bleeding comprise of spontaneous pregnancy loss, ectopic pregnancy, placenta previa, abruptio placentae, and trophoblastic disease [3,7]. Patients are supposed to have queries regarding patterns, contraception, and activity related to reproductive life. In establishing pregnancy-related disorders, a number of examinations are done, including bimanual pelvic examination, a beta-subunit human chorionic gonadotropin test as well as transvaginal sonography [8]. Subsequently, iatrogenic reasons of abnormal uterine bleeding should be investigated. Medication might be the reason behind the onset of bleeding, which includes anticoagulants, reuptake inhibitors of selective serotonin, antipsychotics, corticosteroids, hormonal medications, and tamoxifen. Ginseng, ginkgo, and soy supplements are few herbal substances that alter the estrogen levels and parameters of clotting, and therefore they may cause menstrual irregularities [5]. The evaluation of abnormal uterine bleeding significantly depends on the age of the patient, risk factors associated with endometrial cancer includes high body mass index (BMI), anovulatory cycles, nulliparity, age exceeding 35 years and tamoxifen therapy [8]. Medical management is recommended for patients at low risk for endometrial carcinoma in premenopausal women who are diagnosed with presumed dysfunctional uterine bleeding. Endometrial evaluation of subtle genital tract pathology is suggested for patients having high risk of endometrial cancer as well as at low risk, who keep abnormally bleeding continuously despite of medical management [9].

Recently, hysteroscopy is the most accepted procedure for the analysis and/or for treatment of various pathologies of the endometrial cavity, tubal ostia and/or endocervical canal for diagnosis alone or for diagnostic and operating procedure in the same sitting [10,11]. A review article published in 2011, introduces the diagnostic and operative indications for hysteroscopy. It includes abnormal uterine bleeding, which might be premenopausal or postmenopausal, sub-mucosal, endometrial polyps, intramural, intrauterine adhesions, fibroids, and Mullerian anomalies retained products of conception and intrauterine devices or other foreign bodies and endocervical polyps [5,10]. Several conditions such as viable intrauterine pregnancy, active pelvic infection, uterine cancer or cervical cancer are contraindications to hysteroscopy [11]. The probabilities

to carry out hysteroscopy without anesthesia or with local anesthesia allocate outpatient settings and speedy recovery. The vaginoscopic technique is carried out, that is devoid of tenaculum or speculum, and anesthesia [12]. Mostly the diagnosis and the minor operations can be done without anesthetic or can be performed with a local anesthetic [13]. General or regional anesthesia is ideal for patients undergoing extensive operative procedures, or patients with comorbidities that necessitate intensive monitoring [14,15]. Dilation and Curettage (D&C) are traditionally used to evaluate abnormal uterine bleeding. It is a blind procedure and the endometrium is transported to pathologist for the analyses of histological patterns and reporting [1,16]. The procedure completely depends on co-operation of the pathologist to get outcomes; therefore the procedure is believed to be less accurate.

The study has been undertaken to evaluate the indication for diagnostic hysteroscopy, type of anesthesia used during the procedure, the role of hysteroscopy for evaluation of abnormal uterine bleeding and finding accuracy among hysteroscopy and histopathology via comparative analysis. The study also focused towards the adverse condition affecting the fertility of patients. Furthermore, the study also evaluated the ratio and percentage of cases facing abnormal uterine bleeding, subsequent to the completion of procedure or treatment.

MATERIALS AND METHODS

The present "randomized study" was an approach to overcome the failure of abnormal uterine bleeding treatment. The study had been carried out in the Department of Obstetrics and Gynecology, Krishna Medical Center, Lucknow, India from September 2012 to July 2017. The subject included 400 patients that had been attended OPD and underwent hysteroscopy and D&C subsequent to the exclusion of comorbid illness.

Inclusion criteria

1. Patients had age between 20 to 60 years with AUB
2. Multiparous, nulliparous and grand multiparous
3. Patients did not require emergency treatment [16]

Exclusion criteria

1. Patients with profuse bleeding and large fibroids or multiple fibroids.
2. Cases having genital tract infection and genital tract malignancies [16]

Before proceeding to hysteroscopy, the investigations were done, including PAP smear, vaginal bacteriologic tests, haemograms^[17]. The patients were subjected to detailed history taking, physical examination as well as specific examination in the form of per speculum and per vaginal examination. Blood investigations and urine investigations include hemoglobin (Hb%), ABO and Rhesus (Rh), blood sugar level, time of bleeding, time is taken while blood clotting, aPTT, INR urine routine and microscopy were ordered for all patients^[18]. TVS of all the patients were done. Detailed information of all the patients was obtained before taking up for any procedure^[15]. Hysteroscopy and diagnostic D&C were done for each of these patients. Hysteroscopic-guided curetting were taken and sent for histopathological analysis. The findings at USG, D&C reports, hysteroscopy were compared with each other. The procedures were done under anesthesia in the operation theater. Generally, the antibiotics were not routinely administered during hysteroscopy for avoiding surgical site infection or endocarditis as post hysteroscopy infection occurred in less than 1% of women^[12]. Antibiotics were not regularly prescribed during the procedure^[15].

RESULTS

Hysteroscopy was carried out in this study by means of 5 mm hysteroscope with 30 degrees oblique lens in patients of abnormal uterine bleeding and was performed from September 2012 to July 2017. The study was conducted with a group of 400 patients who were

presented with abnormal uterine bleeding. The endometrium was transported to pathology for histopathological investigations.

In the present study, maximum numbers of patients were between 40–49 years of age. The oldest patient was 52 years old and youngest one was about 22 years old. 17.5% patient's age incidences between 20–29 years, 16% patient's age incidences between 30–39 years, 0.75% patient's age incidences between 50–60 years, however the maximum number of patients incidence between 40–49 years that were 65.75% of all the patients.

The 16 patients of age between 20–29 years had less than 6 months of symptoms, however, 72 patients of age between 40–49 years had symptoms for 6 months to 1 year and 64 patients of the same age group had symptoms for 1 year. Only 2 patients of the age group between 50–60 years had 6 months to 1 year of symptoms and only single case was reported symptoms for 1 year (Fig. 1). About 53% of patients were multiparous and belong to the age group between 40–49 years. Nulliparity was observed in 15% in patients between 20–29 years of age (Fig. 2).

Polymenorrhoea was a frequent clinical presentation in patient of age between 40–49 years and menorrhagia were mostly observed in patients of age between 30–39 years. The clinical presentations for patients of the age group between 20–29 years were not specified shown in Table 1.

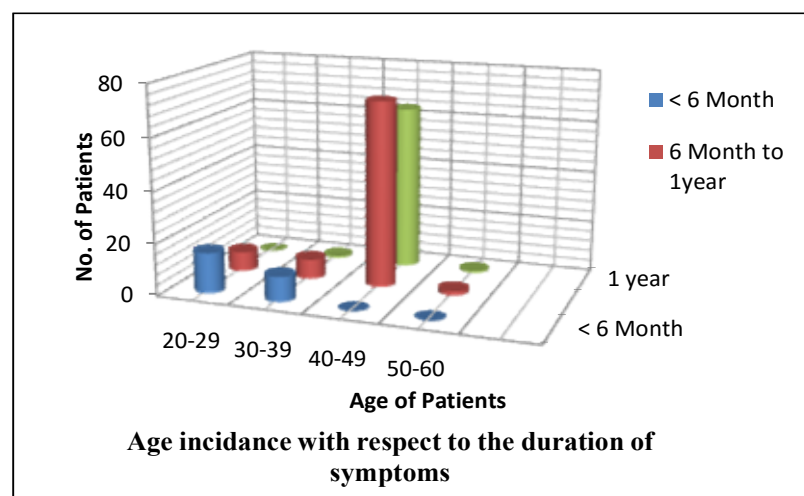


Fig. 1: Distribution of Patients according to age, having Symptoms of Abnormal menstrual cycle and uterine bleeding

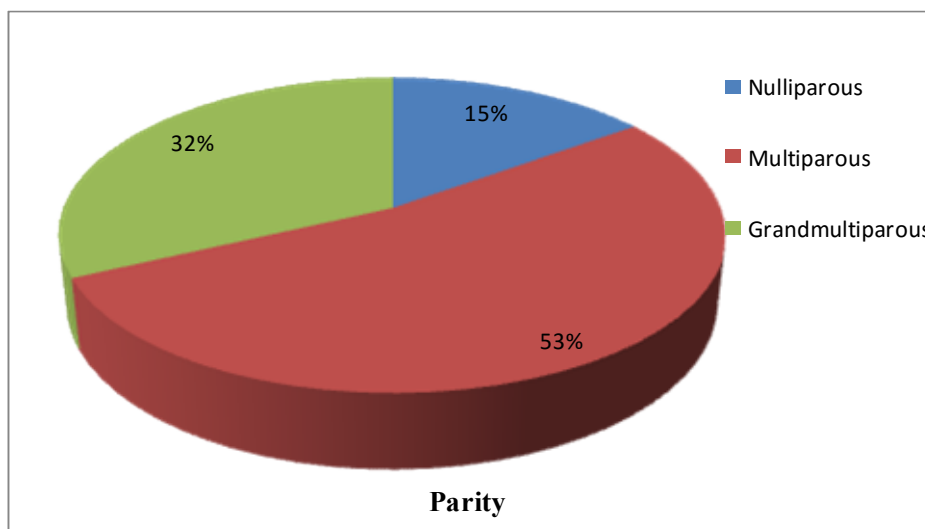


Fig. 2: Distribution of types of parity observed in patients of AUB

Table 1: Clinical presentation: Observation according to Age and evaluated conditions

Clinical presentation	Total no. of Patients	20-29 (Years)	30-39 (Years)	40-49 (Years)	50-60 (Years)	Percentage (%)
Menorrhagia	168	9	72	87	0	42
Polymenorrhoea	80	15	38	27	0	20
Metorrhagia	64	0	37	27	0	16
Postmenopausal Bleeding	88	0	0	27	61	22

The types of anesthesia used for the hysteroscopy showed predominance of involvement carried out without any anesthesia. Usually, general anesthesia with orotracheal intubation was recommended for combined interventions or major hysteroscopic surgeries i.e. myomectomy or metroplasty with a descending trend between 2012 and 2017 from 10% to 7%. We have observed a slight ascending trend for utilization of general anesthesia with sedation between 2012 and 2017 from 20% to 22% (Fig. 3). Diagnostic hysteroscopy was performed without anesthesia in 60% to 62% cases. The use of anesthesia in this study is graphically represented in Fig. 3.

Hysteroscopy findings suggested that most of the patients were experiencing endometrial hyperplasia. Total 22% of patients were found to have endometrial hyperplasia, 10% with submucous myoma followed by 11% endometrial polyp and 9% endometrial atrophy (Fig.

4A). The outcomes of histopathology revealed that 56% of patients had no abnormalities and 23% of patients had endometrial hyperplasia followed by 11% of cases with endometrial atrophy. The histopathology finding suggested that 56% patients were normal, 23% patients were found to have endometrial hyperplasia, 0% with submucous myoma followed by 6% endometrial polyp and 11% with endometrial atrophy. Minority 4% of the cases reported with irregular shedding (Fig. 4B). While diagnosing the abnormalities, the hysteroscopy and histopathology were accurate with a specificity of 94.9% and PPV (positive predictive value) of about 97.01% and 94.66%. The lesion was diagnosed comparatively more frequently with hysteroscopy due to 91% of sensitivity in comparison to curettage having only 68.89% of sensitivity. The final diagnosis and accuracy of hysteroscopy and histopathology are summarized in Fig. 5.

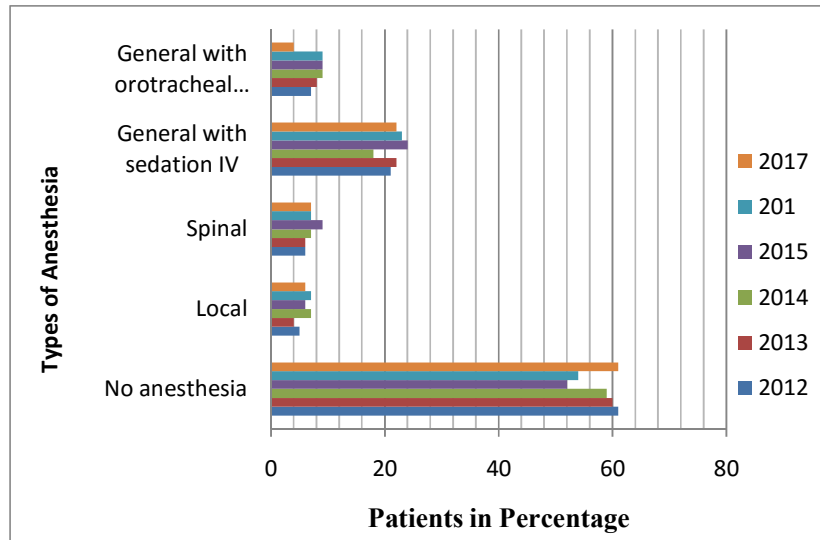


Fig. 3: Anesthesia given to the patient for hysteroscopy

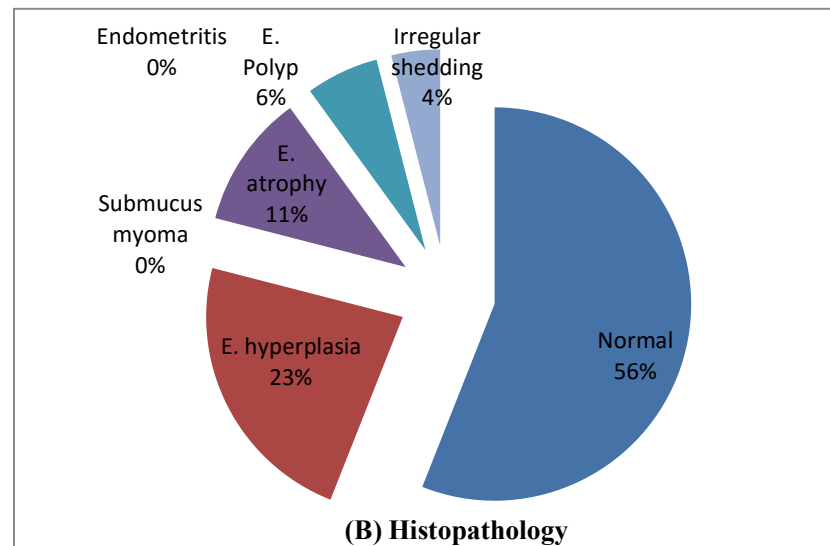
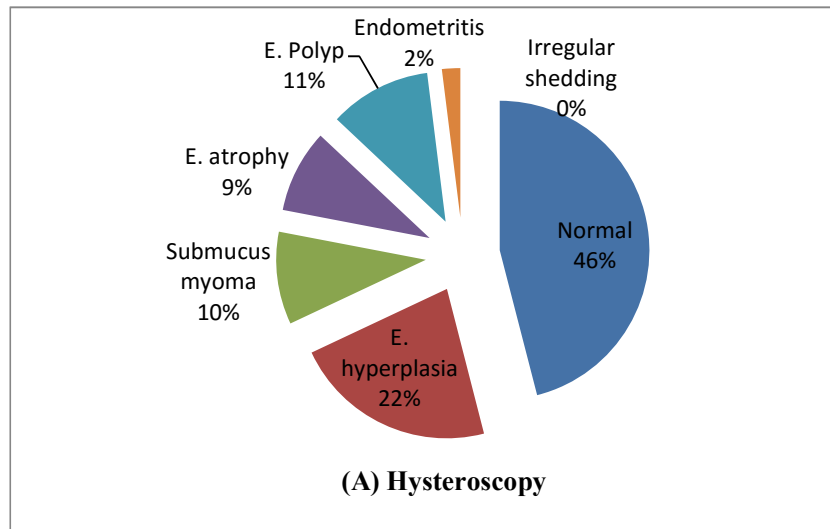


Fig. 4: (A) Hysteroscopy findings and (B) Histopathology findings from patients
E= Endometrial

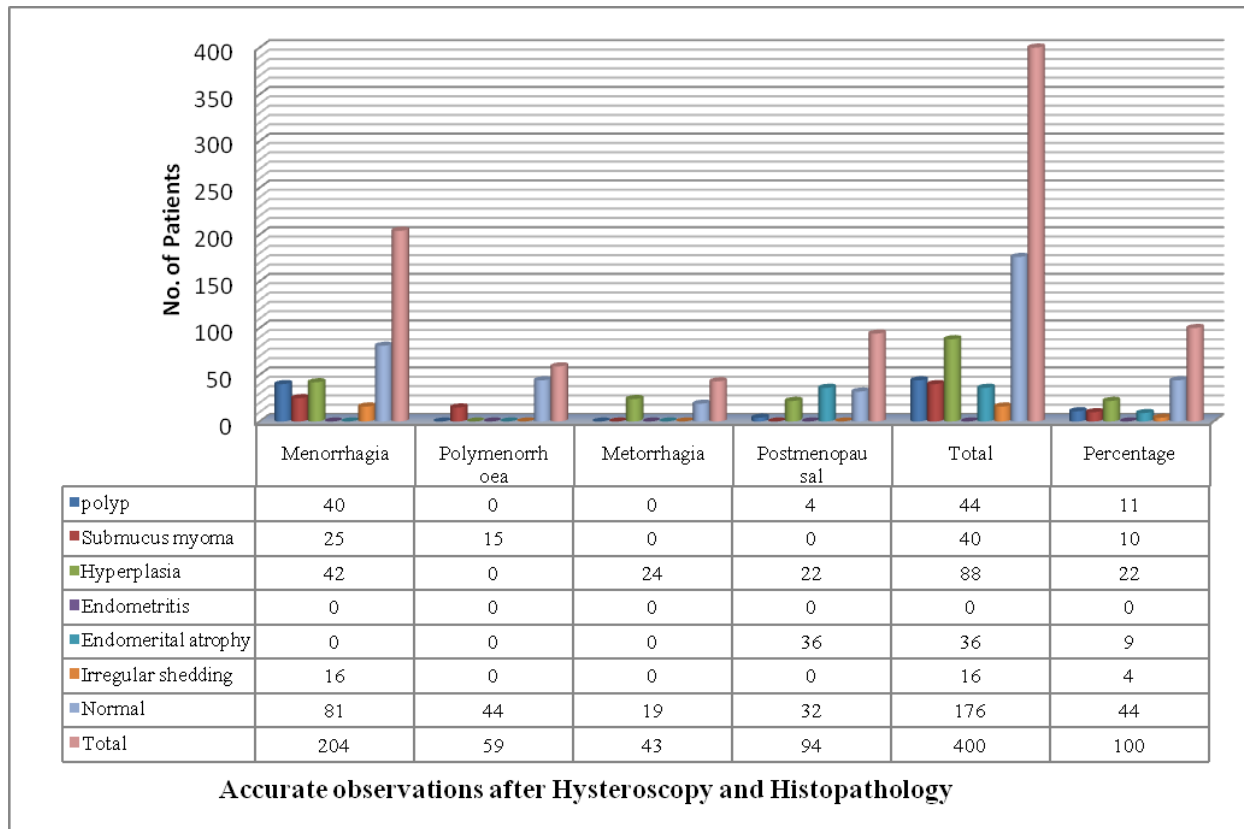


Fig. 5: Final outcomes obtained through diagnostic hysteroscopy and histopathology

From the abnormal cases (patient), 44% of cases were reported with primary infertility and 56% of cases with secondary infertility (Table 2). The pathology diagnoses for abnormal uterine bleeding in patients were shown by the graph (Fig. 6). Endometrial pathology was not observed in 26% cases. In 19% of cases, hysteroscopy concluded endometrial cavity, requiring curettage biopsy

for endometrial hyperplasia. In 21% of cases, focal pathology was detected (focal hyperplasia of the endometrium and small polyps), which was followed by hysteroscopic biopsy, about 16% were represented by the intra-cavitary foreign bodies and impacted IUD, 3% of endometrial polyps and 3% of sub-mucosal myoma.

Table 2: Hysteroscopy: Primary infertility and secondary infertility Cases

Infertility stages	Normal (%)	Tubal unilateral (%)	Tubal bilateral (%)	Polyps (%)	Endometritis (%)	Uterine septum (%)	Myoma (%)
Primary infertility	45	09	19	11	02	04	10
Secondary infertility	41	25	29	02	01	01	01

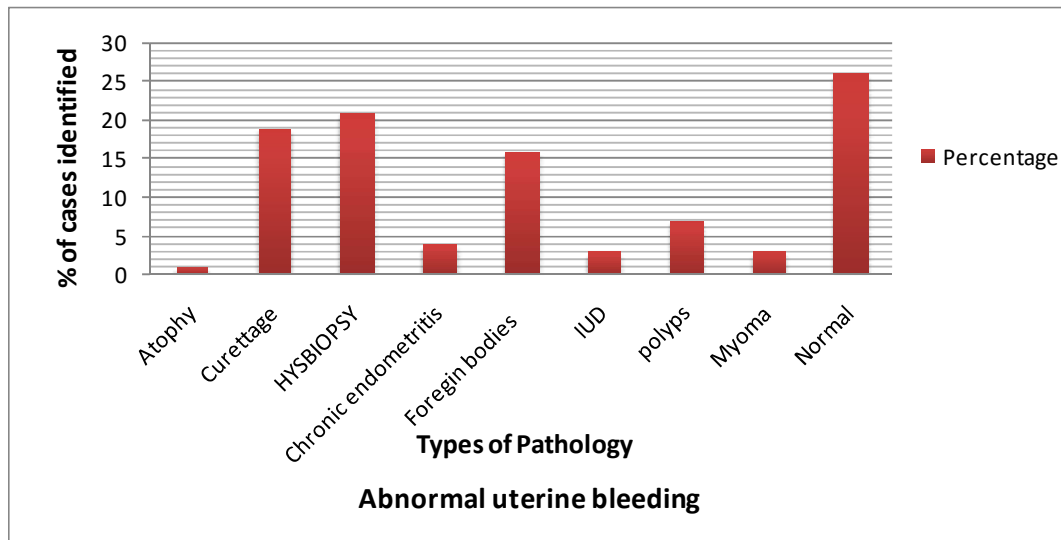


Fig. 6: Data of different Pathology for abnormal uterine bleeding

Whereas- Hys biopsy- Hysteroscopic biopsy; IUD- Intrauterine devices

DISCUSSION

This study was done with the patients of the age group between 20–60 years. However the maximum abnormalities were observed in cases of age between 35–45 years. The study given by Panda *et al.* [19] identified that the maximum age incidence between 35–45 yrs and the range of age in Gianninoto's series was 38–40 years and consequently most common incidence was between 30–45 yrs, however, Trotsenburg acknowledged the maximum age incidence between 41–50 yrs [18,19].

The most common clinical symptoms presented in this study was menorrhagia in 42% of cases. Postmenopausal bleeding was present in 22% cases and 20% cases shown Polymenorrhoea [20]. The series given by Panda *et al.* [19] recognized menorrhagia in 60% of cases followed by Polymenorrhagia and Metrorrhagia [15,21]. In our study, 46% were found normal on hysteroscopy whereas 54% of patients were identified with abnormal symptoms related to reproductive health. Since 1999, the specialists of reproductive gynecology have disputes regarding the inclusion of hysteroscopy in infertility investigation. Hysteroscopy detected endometrial polyp, submucous fibroid and all cases of endometrial hyperplasia accurately [15,20]. European society of human reproduction and embryology conducted a study on hysteroscopy with endometrial biopsy and thus concluded that the hysteroscopy with endometrial biopsy is the "Gold standard" to investigate abnormal uterine bleeding [19-22]. Dilatation and

curettage was considered as obsolete because it is a blind procedure with a complication rate of 6% to 8% and low sensitivity for local and pedunculated intra-cavitary lesions [9,16]. The Lesions were more accurately visualized through hysteroscopy therefore biopsy can be done simultaneously. A study carried out at the University of Wisconsin, Madison evaluated that the hysteroscopy with biopsy allocates the visualization of the endometrial cavity and is considered as the gold standard for endometrial assessment [23].

The series provided by specialists of reproductive gynecology concluded that hysteroscopy is necessary for infertility investigated by Revel and Shushan [22]. However, the World Health Organization recommends hysterosalpingography (HSG) for the management of infertile women because HSG provides information on tubal potency or blockage [15,23]. World Health Organization recommended hysteroscopy when an intra-uterine abnormality was diagnosed via clinical or complementary examination such as ultrasound and/or HSG or after the failure of *in vitro* fertilization [24,25]. Even so, most of the specialists experience that hysteroscopy is a more accurate tool because of their low false positive and false-negative rates of intrauterine abnormality and as a result, most of the specialist of infertility utilizes hysteroscopy as "first-line routine exam" for infertility patients [26-29].

CONCLUSIONS

The study revealed that the hysteroscopy is safe and relatively more accurate in comparison to another procedure to diagnose the patients, who had abnormal uterine bleeding. Therefore, the procedure can be considered as an advantage for women facing infertility problems. The abnormalities and clinical presentations of AUB and other genital tract malignancies have been easily diagnosed by using hysteroscopy as well as it can be operated and treated in the same sitting. The gynecologists prefer hysteroscopy over D&C USG and/or HSG because these procedures failed to detect cervical or uterine pathologies and cancer as well as the results obtained through this procedure illustrates the high rate of false positive. Therefore, it possibly will lead to the wrong diagnosis and therapeutic decision. Moreover, the outcomes revealed through this procedure are less specific and have had low sensitivity compared to hysteroscopy, therefore fails to identify the lesion.

Our study provided information on the effectiveness and accuracy of hysteroscopy. We concluded that hysteroscopy should be the first and foremost examination to be done for patients experiencing abnormal menstrual and/or abnormal uterine bleeding. As well as it can provide a decisive outline for further improvement in management and follow-up of patient with abnormal uterine bleeding and infertility, thus, benefitting in terms of time loss in reaching to an endpoint for the final accurate diagnosis for the patient. This study is a strong data source that may facilitate innovative ideas among researchers to improve technology.

CONTRIBUTION OF AUTHORS

Research concept- Dr. Chandravati

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Supervision- Dr. Chandravati

Materials- Dr. Chandravati

Data collection- Dr. Malvika Misra

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Critical review- Dr. Chandravati

Article editing- Dr. Malvika Misra

Final approval- Dr. Chandravati

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