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ORIGINAL ARTICLE

Effect and Risks with Insertion of Vaginal Foreign Bodies in the Pediatric and Adolescent age

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ABSTRACT

Background: The children and adolescent reporting vaginal injury due to foreign object insertion are reported as 4% of the cases visiting a gynecological outpatient department. Most common symptoms observed are the bleeding or foul-smelling vagina with abnormal discharge**.**

Objective: To assess the effect and risks with insertion of vaginal foreign bodies in the pediatric and adolescent age.

Study Design: Retrospective study

Place and Duration of Study: Balochistan Institute of Child Health Services Quetta from 1st June 2021 to 30th June 2023.

Methodology: Five hundred children and adolescent visiting the Balochistan institute of child health services OPD or emergency unit were enrolled in this study. The inclusion criteria was considered all those children and adolescent girls between the age group of 6-15 years with vaginal discharge and discomfort and diagnosed as cases of foreign body insertion in their vagina. A complete clinical assessment as well as demographic details of each patient was registered. The clinical details regarding physical and psychosocial assessments as well as the type of object used for insertion was conducted through a well-structured questionnaire.

Results: The mean age of the patients was 7.5±3.2 years. Majority of children and adolescent had inserted magnetic beads/hard items in their vagina followed by batteries or other mechanical devices. The Physical /Psychosocial examination of patients showed 42% had performed self-induction while 35% were anxiety driven cases. Out of the total number of patients 182/500 had vaginal bleeding, while 144/500 had fowl smell and vaginal discharge. Pain and fever was recorded in 115/500 cases. Ultrasonography seems to have 79% sensitivity and an effective method for identification of foreign body in vaginal track. The recent study also analyzed the consequences of vaginal foreign body insertion and found 94% cases to have bacterial infection (S with those cases which were delayed having septicemia and long term treatment requirement of antibiotics for their bacterial infection. Surgical intervention was performed in almost all cases. In 3% cases had fistula formation.

Conclusion: In children and young adolescent females presenting recurrent or persistent vaginal discharge the risk of such insertion includes severe bacterial infection and even septicemia.

Keywords: Effect, Risk, Vaginal foreign body, Pediatrics

INTRODUCTION

Vaginal foreign objects represent serious challenges in the clinical and diagnostic identification with high risk of infection and comorbidity formation. There have been various researcharticles identifying the consequences of foreign bodies in vagina of pediatric andadolescent case. It is pertinentto understand that children and adolescent age is highly vulnerable with raising hormonal changes causing inquisitiveness about bodily functions.[1-4] This might induce many children or adolescent for inserting foreign objectives in their genital system. However, these foreign bodies can cause severe infection in the body including bacterial infection, inflammation and sepsis requiring the urgent need of removal of foreign object from the body.[5]

Several studies have highlighted the rare or complex cases reported in the aforesaid scenario. A current review included those patients who self-inserted objects within their vagina.[6] While, another systematic review provided an overview of all published data on foreign body insertion and encouraged the clinicians to reflect the social context of such incidences. The diagnostic investigations as well as potential drawbacks within the identification of such cases is a prioritized concern for timey management and treatment of the child and adolescent.[7,8]

The children and adolescent reporting vaginal injury due to foreign object insertion are reported as 4% of the cases visiting a gynecological outpatient department.[9] Most common symptoms observed are the bleeding or foul-smelling vagina with abnormal discharge.[10] In young children the vaginal-purulent discharge is reported to be resistant to the antibiotic treatment. There have been cases where untreated foreign object have led to abdominal cavity perforation and vesico-vaginal fistulae.[11]

The current study was performed for assessing the effect and risks with insertion of vaginal foreign bodies in the pediatric and adolescent age. The results of this study provided authentic data which can be utilized in early assessment of the cases and treatment, thus mitigating the risk of serious infections among children and adolescent suffering from vaginal injury through foreign body insertion.

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MATERIALS AND METHODS

This single hospital based retrospective study was conducted at Balochistan Institute of Child Health Services Quetta from 1st June 2021 to 30th June 2023. A total of 500 children and adolescent visiting the Pediatric OPD or emergency unit were enrolled in this study. The sample size was generated from WHO sample size calculator using 4% prevalence of vaginal foreign body insertion in children and adolescent age group. The sample size calculation also applied 95% CI, 80% power of test with 5% margin of error. The inclusion criteria was considered all those children and adolescent girls between the age group of 6-15 years with vaginal discharge and discomfort and diagnosed as cases of foreign body insertion in their vagina. The complete clinical assessment as well as demographic details of each patient was registered after having their formal informed consent for participation in the study through their parents or guardian attending. The study was ethically approved form the institutional review board. The clinical details regarding physical and psychosocial assessments as well as the type of object used for insertion was conducted through a well-structuredquestionnaire and diagnosed through clinical/physical examination as well through ultrasonography and X-ray as a combination of both techniques for more efficientanalysis. The patients suffering from high grade fever and irritability were immediately transferred on antibiotic treatment, with their blood culturing reports sent for analysis. Those patients who were stable but in pain and agonized with skin irritation were tested through vaginal swab for the bacterial culturing. Surgical intervention was prioritized in cases with deep insertion and infection risk with localized anesthesia deliverance. Patients were shifted in post

operative room after surgery and their recovery was well noted. A complete antibiotic course was administered against bacterial infections. In children who required intravenous treatment, tobramycin or gentamicin was used and normal kidney function was confirmed. When abnormal kidney function was suspected, ceftriaxone or cefotaxime were alternative treatment options. In children who can receive oral treatment without any known resistant urinary cultures, cefixime or amoxicillin-clavulanateare the empirical treatment options. For children with little or no urethral injury, no catheterization or temporary catheterization after surgery was performed. Those cases who did self-insertion were forwarded for psychological counselling for preventing any future events. Any case of physical abuse was investigated completely.Children returned to the outpatient department for review once within 1 month after surgery. In addition to asking about clinical symptom relief, a routine urinalysis and ultrasonography were usually performed to evaluate the outcome of the surgery. All the relevant data information was entered in SPSS version 26.0.

RESULTS

The mean age of the patients was 7.5±3.2 years. Majority of children and adolescent had inserted magnetic beads/hard items in their vagina followed by batteries or other mechanical devices. The physical/psychosocial examination of patients showed 42% had performed self-induction while 35% were anxiety driven cases. About 6% of the cases were because of physical abuse leading to vaginal injury and infection (Table 1).

Table 1: Distribution of age and clinical characteristics of enrolled patients (n=500)

Characteristics	No.	%
6-10 years	260	52.0
11-15 years	240	48.0
Object of Insert		
Magnetic Beads/hard items	130	26.0
Needles/sharp object	95	19.0
Batteries	125	25.0
Thread	150	30.0
Physical /Psychosocial examination		
Self Induction	290	42.0
Anxiety Driven	180	35.0
Abusive activity	30	6.0

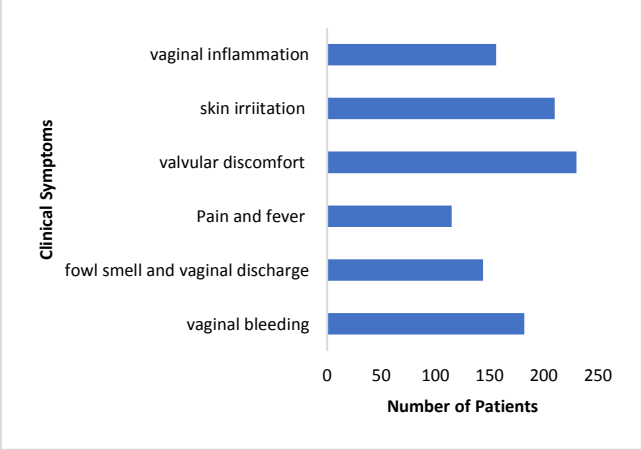

Fig. 1: Clinical symptoms observed in patient's inserted foreign object in vagina

Ultrasonography and X-ray as a radiological technique was performed in the enrolled patients. The x-ray sensitivity was observed as very poor in identification of the foreign object with only 29%. The images were also not very accurate while ultrasonography seems to have 71% sensitivity and an effective method for identification of foreign body in vaginal track (Fig. 2)

The patients had developed various clinical symptoms as an effect of foreign body insertion. Out of the total number of patients, 182 had vaginal bleeding, while 144 had fowl smell and vaginal discharge. Pain and fever was recorded in 115 cases. Urinary symptoms including discomfort with urination as well as vulvar discomfort as consequence of vaginal discharge, skin irritation and vaginal inflammation were also recorded. Abdominal or pelvic pain was observed in 345 cases due to placement of large objects (Fig. 1).

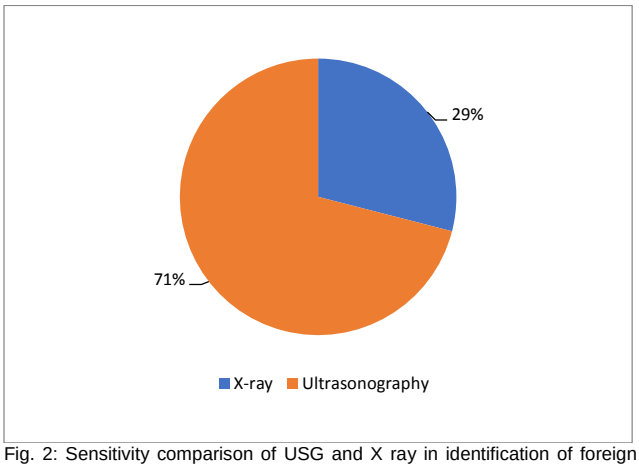

Fig. 2: Sensitivity comparison of USG and X ray in identification of foreign object

The present study compared the imaging results of USG and X-ray and significantly reported the variance among both wherein exact location, size of the foreign body in the vagina could be more accurately observed and studied through ultrasongraphic imaging. Fig 3

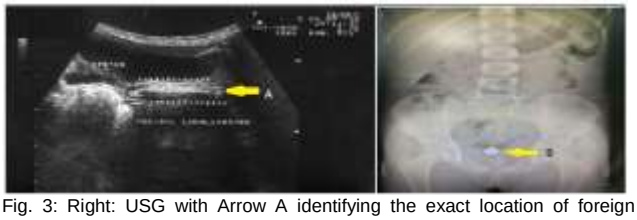

Fig. 3: Right: USG with Arrow A identifying the exact location of foreign object, left: Radiological Image with Arrow B identifying the localized position of foreign Object.

The recent study also analyzed the consequences of vaginal foreign body insertion and found 94% cases to have bacterial infection (Staphylococcus aureus) with those cases which were delayed having septicemia and long term treatment requirement of antibiotics for their bacterial infection. Surgical intervention was performed in almost all cases. In 3% cases had fistula formation (Table 2).

Table 2: Frequency of bacterial infection, fistula formation and abdominal cavity in the enrolled patients (n=500)

Consequences	No.	%
Bacterial infection	470	94.0
Fistula formation	15	3.0
Abdominal cavity inflammation	18	3.6

DISCUSSION

An extensive range of objects can be discovered in the vagina, such as safety pins, hair grips, pencils, small jam jars, and toilet tissues, particularly in individuals who are mentally disabled or young children.[12] Children typically insert toys, sweets, and hairpins into the vagina out of curiosity. The most common foreign objects are small pieces of toilet paper that inadvertently enter the

vagina.[13] Foreign bodies may also be inserted for various reasons, including hygiene purposes, accidental insertion, abortion induction, or as contraceptive devices. Foreign objects are also encountered in other body orifices in children, such as the ears and nose.[6] For example, the most frequent presentation of a unilateral nasal foreign body in pediatric patients includes recurrent rhinitis, rhinorrhea, and unilateral epistaxis.[12] Nasal foreign bodies can consist of items like button cells, stones, beads, nuts, seeds, small erasers, and toy parts.

Ologeet al[14]reporred in the area of Ibadan, Nigeria, observed that children with auricular foreign bodies experienced otalgia in 17.3% of cases and otorrhoea in 9.9% of cases. Other symptoms included ear bleeding and hyperacusis. Another researcher[15] also documented otorrhoea and otalgia in a separate study. Concerning vaginal foreign bodies, vaginitis can lead to ulceration of the vaginal walls, potentially extending to nearby structures and causing urinary and fecal fistulae.[16]Infections that ascend may result in conditions like salpingitis and peritonitis. In rare cases, neglected pessaries can cause severe ulceration of the posterior fornix and, subsequently, vaginal carcinoma.[12]In the case described here, the patient only exhibited minor abrasions of the vaginal wall.

The main symptom typically observed is a foul-smelling discharge tinged with blood, as noted in this case. Removal of the foreign body is necessary, which can often be straightforward, although in young children, a narrow-illuminated endoscope may be required. The vaginal wall generally heals on its own after removal, as also seen in the current case. The presence of a vaginal foreign body may raise concerns about possible sexual abuse. While not always indicative, this possibility should be considered when evaluating any child with symptoms involving the vulva and vagina. Children may be unable to disclose whether an object was placed in the vagina; therefore, it is appropriate to inquire about sexual activity and potential abuse. The potential for sexual abuse, particularly in girls with a vaginal foreign body, should always be investigated.[12]

In the present case, the exact method by which the foreign body entered remains unclear. However, at this stage of development, the hymen transitions from a ring-like shape to a thin, smooth, delicate, and nearly translucent membrane.[17,18] This change likely facilitated the entry of small shreds of toilet tissue paper, considering it was removed using a swab stick.However, Chia-Woei Wang and colleagues[14] have highlighted the utility of continuous flow vaginoscopy for detecting intra-vaginal foreign bodies, which can then be successfully removed using hysteroscopy. They concluded that hysteroscopy is safe, convenient, effective, and manageable even in pediatric cases. In the patient under discussion, the foreign body was removed during examination under anesthesia using only a cotton ball. Notably, current methods for addressing vaginal foreign bodies include hysteroscopy (as previously mentioned) and colposcopy (for cases beyond the vagina).[12]

While vaginal examination typically identifies the presence of a foreign body, certain imaging techniques can also be beneficial. Methods such as pelvic ultrasonography, plain pelvic radiography, vaginography, and magnetic resonance imaging (MRI) are used to exclude vaginal foreign bodies, with MRI often considered the most effective.[19]While simple X ray technique seems not so beneficial in identifying the foreign object as observed in the current study results as well. Gynecological issues, such as vaginitis due to vaginal foreign bodies, encountered in pediatric patients require specialized clinical management skills distinct from those used for adults.[20]There is an increasing need for specialized pediatric gynecology clinics in many centers to develop the necessary expertise and skills for managing pre-pubertal girls.

CONCLUSION

Vaginal foreign body is presented with diverse clinical symptoms and should be considered seriously in children and young adolescent females presenting recurrent or persistent vaginal discharge the risk of such insertion includes severe bacterial infection and even septicemia.

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