

INJURIES OF THE VULVA AND VAGINA IN CHILDHOOD*

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Injuries of the vulva and vagina are relatively rare in children. Over a seven-year period, we treated 45 girls. The most common etiologic factor in our study group was trauma. While 28 had only vulvar lesions, the rest had injuries of both the vulva and vagina. Thirty-two children were treated surgically for only vulvar and vaginal injuries. However, additional organ treatment was mandatory for 13 children. **Key words:** vulvar injury, vaginal injury.

There are very few documented cases in the literature describing injuries of the vulva and vagina (V V)¹⁻¹⁰. Over a seven-year period, we treated 45 children with V V injuries at the Çukurova University Medical Center. This figure amounts to 7.2 % of the children who were admitted with the diagnosis of trauma in the same period. These findings prompted us to study this rare and interesting type of trauma.

Material and Methods

The study population comprised forty-five patients with V V injuries who had been admitted and treated in the Department of Pediatric Surgery between the years 1978 and 1985. Children experiencing minor injuries i.e., crushing and hematomas in which surgical treatment was not required, were not included in this study. All clinical reports of the 45 children were reviewed within the framework of the following parameters: age, etiology, time of admission, symptoms, physical and laboratory findings, traumatic lesions, surgical approaches, complications and mortality, the relation of organ and/or system injury to complications and mortality.

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Results

Etiology : Only 38 (84.4 %) of the 45 children presented with information about the etiology of their injury in their clinical files. Twenty of them had fallen from a height and 15 had been injured in a traffic accident. One patient was injured when a wall collapsed, and a six year-old girl was raped. The injury in the newborn baby was due to birth trauma. All the children who had fallen from a height had no other history which would have caused V V injury. Forty percent of the children had fallen from roofs.

Age : Our youngest patient was a four-day-old newborn, eight patients (17.7 %) were between 1-4 years of age, 32 patients (71.3 %) were between 5-9 years of age, and four patients (8.8 %) were between 10-13 years of age.

Admission time : The fastest admission to the hospital was ten minutes and the slowest was six days after the injury. Fourteen (31.1 %) of the patients arrived within the first hour, twelve (26.2 %) within 1-6 hours, eight (18.0 %) within 6-24 hours and four (8.8 %) within 1-6 days after the injury. The admission time of the remaining seven patients was not recorded.

Symptoms and physical findings : In most of the patients pain was determined in the genital region, while in the rest it was located in the pelvic region, the extremities, and in the abdomen. Upon examination in the emergency room, hematuria was noted in five patients, vaginal bleeding in 16, respiratory difficulty in one, hypotension (60-40 mm Hg and below) in seven and tachycardia in 15.

Laboratory findings : Hemoglobin (Hb) levels were above 10 g/dl in 36 patients and below that level in nine patients. Three urethra ruptures, one bladder neck rupture, and one perivesical hematoma were diagnosed by IVP and cystogram studies. X-ray studies demonstrated the presence of lower extremity and/or pelvic fractures in seven patients.

Traumatic lesions : While 32 (71.1 %) of the children had only V V injuries, the rest (28.9 %) also had additional organ injuries.

Vulvar injuries : Twenty-eight of the 45 children had only injuries of the vulva. In these patients fifty-two injuries were demonstrated in various areas of the vulva (Table I). Eighteen (34.9 %) of the lesions occurred in the labium minus. This was followed by injuries of the hymen (23 %), labium majus (15.3 %), clitoris (15.3 %) and comissura posterior (11.5 %).

Extensive vaginal lacerations : The posterior fornix was the most injured part of the vagina and laceration was found in eight children. Other vaginal injuries were as follows : vaginal rupture in two children, anterior wall laceration in one child and right fornix laceration in one child. In addition to the vagina, an injury to the uterus was also found in one child.

TABLE I: Localization of Vulvar Injuries in 28 Patients

Localization	Number of Patients (%)
Labium minus	18 (34.9%)
Hymen	12 (23.0%)
Labium majus	8 (15.3%)
Clitoris	8 (15.3%)
Posterior commissura	6 (11.5%)

Additional organ injuries : In our study group several additional organ injuries were also observed in 13 children (28.9 %). Eight patients had an intestinal, seven skeletal, and five urologic injuries while three children had extensive skin lacerations. Left diaphragm laceration, lung laceration, right femoral artery and vein injuries were separate operative findings.

Surgical approaches : While 32 of the 45 patients had only V V repair, 13 patients also had additional surgical procedures as follows : colostomy (6), cystostomy and urethral anastomosis (4), anoplasty (3), cystostomy (2), diaphragmatic repair (1) and suture of the sigmoid colon serosa and mesentery (1) (Table II).

TABLE II: Surgical Approaches in 45 Patients With Injuries of the Vulva and Vagina.

Surgical Approach	Number of Patients (%)
Vulva and Vagina Procedures	32 (71%)
Simple Suturing	8
Extensive Surgery	24
Additional Organ Procedures	13 (29%)
Colostomy	6
Cystomy and	
Urethral anastomosis	4
Anoplasty	3
Cystostomy	2
Diaphragmatic repair	1
Suture of the sigmoid	
Serosa and mesentery	1
Total	45 (100%)

Complications and mortality : Four complications (8.8 %) were encountered: in the early postoperative period, wound infection occurred in two children; one child had a leg amputated, and urinary incontinence developed in one child in the late postoperative period. There were no other late complications or functional or cosmetic problems in the one-eight years that followed.

There were only two mortalities in the group. One of the deaths was related directly to the trauma. The child had V V destruction and extensive tissue loss. The other patient died in the early postoperative period of colostomy closure, due to respiratory arrest.

The correlation between time of admission, complications and mortality : There was no clear correlation between admission time and complications. Three of four children with complications were admitted to the hospital shortly after treatment, which was an elective procedure.

The correlation between additional organ injury, complications and mortality : Additional organ injuries were encountered in three of the four children who developed complications. One of the deaths in this group had multiple system injuries due to a traffic accident.

Discussion

Injuries of the vulva and vagina are not common in children, and thus, few of these cases have been reported in the literature. However, Wynne¹⁰ has reported 33 such childhood cases in his series, and Rush and Milton⁸ have described a total 36 children and adults with V V injuries.

In this study nearly half of the patients (40 %) who had fallen from a height fell from roofs. The roofs of houses in the small towns and villages of the Çukurova region are smooth and built of concrete. They are used for various purposes, such as sleeping areas on hot summer nights. All the injuries that resulted from falling from heights happened during the warm seasons of the year, which means that a certain type of serious trauma occurs in the southern part of the country. On the other hand, the etiology of V V injury in the newborn baby in our study group is a very rare type of trauma. It was due to the vaginal examination performed on the mother by the obstetrician during the baby's breach presentation. This situation can be considered a prenatal V V injury which has never been reported before.

In all series of V V injuries, rape takes first place in the etiology. Wynne¹⁰ reported that 24 (72.7 %) of his patients were injured as a result of rape. Rush and Milton⁸ described 25 patients with coital injuries, 14 of which were the result of rape. It is confirmed that 20,000-50,000 girls are raped in the U.S.A every year, and that 67,131 cases of rape were reported in 1978⁹. In that report, the ages of the victims varied between three months and 90 years. In Wynne's series¹⁰, the

youngest patient was 15 months, and the oldest was 12 years old. In our study group there was only one child who had been raped. She was a six-year-old girl who was brought to the hospital 32 hours after the act had occurred. She had a perineal laceration extending from the posterior wall to the anus. None of our other patients gave a history of rape either on admission or during treatment. The mean age of our patients was 6.24 years. Thirty-two (71 %) of the children were five to nine years of age. Thus, most of the subjects in this study were children engaged in play activities. These findings explain why etiologic factors in most of the cases were falls and traffic accidents. Therefore, to avoid this serious problem, school transportation vehicles should be carefully examined, a proper program in traffic education instituted, sufficient playgrounds constructed, and railing should be installed around roofs.

In our study, most of the injuries were caused either by a fall from a height or by a traffic accident. Some of the injuries resulted in lower extremity and/or pelvic fractures. These findings once again demonstrate the close relation between fractures and V V injuries. The ten-year-old patient described by Ikpeme and Morrison¹¹ is a typical example of a V V injury resulting from a pelvic fracture. In one series reported, two of 16 patients with open pelvic fractures, and four of 114 patients in another group with pelvic fractures also had V V injuries¹².

Clinical and laboratory findings play an important role in the treatment of V V injuries. An early and careful examination must be carried out on these children who have genital organ injuries. It is our policy to perform the clinical examination under general anesthesia, which not only provides a detailed and easy examination but also prevents psychologic damage which might lead to sexual problems when the child reaches adulthood. Of the 28 patients in our study with vulvar injuries, 14 of the children had first degree, 11 had second, and three had third degree lacerations. These findings are almost the same as the findings reported by Wynne¹⁰. On the other hand, we also had two children with abdominal penetration of vaginal rupture, and two with complete destruction of the vulva and vagina. The last type of injury is the most serious, and the two patients with this injury are the first ever to be reported in the literature.

Rush and Milton⁸ and Wynne¹⁰ believe that delays in admission play a considerable role in development of complications. About 34% of the patients in Wynne's series¹⁰ were hospitalized between one and seven days following the injury. We found no correlation between delays and complications in our patients. In our study group, three of the four children who developed complications were admitted shortly after the injury occurred.

Additional organ injuries cannot be ignored in our series. Thirteen of the children had additional organ and/or system injuries which resulted in complications in

three and in death in one. These findings, once again, underline the importance of traffic accidents and falls from heights in the etiology.

Different mortality rates have been reported in V V injuries. Rush and Milton⁸ and Wynne¹⁰ reported no mortality in their series. We reported only one death, which constitutes a mortality rate of 2.2 percent. This patient was brought to the hospital nine hours after a traffic accident in hypovolemic shock. Since most of our children were admitted with additional organ and/or system trauma, it is our opinion that complications and mortalities in this study were not directly caused by V V injuries.

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