
Injuries of the External Genitalia

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Introduction:

External genitalia of males and females are prone to sustain trauma even during intercourse or during normal delivery. The traumas of external genitalia sometimes isolated i.e. may not associated with injury of other organs. Early and correct diagnosis is essential for preservation of precious organs. Generally, severe injuries of the external male genitalia are rare because of the location and mobility of the penis and scrotum. Beside primary wound treatment and maintenance or recovery of function (erection, fertility, testicular hormone secretion and micturition), satisfactory cosmetic results are also important in the surgeon's efforts. The reconstruction of the urethra and microsurgical re-anastomosis of the corpora cavernosa to the penile vessels and nerves have given remarkably good results for the recovery of erectile function. However, because of the rarity and disparity of severe genital injuries there is no universal therapeutic strategy.

Circumcision-related penile injuries are common when the procedure performed outside hospital by non experience hands, and may resulting in partial or complete amputation of glans or even complicated by urethrocuteaneous fistulae. The other forms of traumas of penis are Zipper injury, Human hair-tie strangulation injury. The blunt penile traumas during sexual intercourse resulting in fracture penis are the most common cause of penile injury; however the numbers of victims of penile penetrating traumas mainly due to bullet injuries are increasing in last years.

In same way the number of victims of testicular penetrating traumas increased specially due to gunshot injuries however the number of patients sustained blunt traumas and testicular dislocations increased due to increase the number of bike riders.

Aim of the Study:

Injury to the male external genitalia is rare and, therefore, there are little data in the literature regarding the options for nonoperative management and outcome.

The aim of our study is to answer many important questions such as

What ages are most susceptible to genital trauma?

What is the implicated cause of trauma?

Which side is commonly involved?

What are the most common presenting symptoms?

What are the indications of exploration?

What is the outcome of the management?

Methods And Materials:

The study was started as a retrospective study by reviewing a cases of isolated external genital trauma in a period from January 2002 to 2008 (6 years) then the study carries out prospectively over 4 years from June 2008 to September 2012 the i.e. the study carried out over the last 10 years (from January 2002 to September 2012 by registering all admitted cases who sustained trauma to their external genitalia). All cases were included in study having isolated external genital trauma i.e. they are not associated with multiple trauma cases.

However, the cases of genital injury associated with soft tissue injury like thigh skin injury or through and through gunshot injury to thigh without vascular or bone injury include in study. The traumas of external genitalia were included in our study with exclusion of idiopathic torsion (Not associated with vigorous movement or obvious trauma). Penile fracture and were considered in our study as isolated blunt trauma of external genitalia. The total number of cases presented with history of trauma to external genital was 172 patients. 166 (96.5%) cases in were males and only 6 (3.4%) cases were females. (Table 1)

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Table 1 Age and sex distribution of trauma of external genitalia			
Age	Total	M	F
≤10Y	19 (11.04%)	13	6 (3.4%)
11-20	36 (20.9%)	36 (20.9%)	--
21-30	44 (25.5%)	44 (25.5%)	--
31-40	31(18.02%)	31(18.02%)	--
41-50	26 (15.11%)	26 (15.11%)	--
51-60	13 (7.5%)	13 (7.5%)	--
>60	3 (1.7%)	3 (1.7%)	--
Total	172	166 (96.5%)	6 (3.4%)

Out of 166 (96.5%) male cases, penile traumas were recorded in 62 (36.04%) cases, while testicular and/or scrotal injury recorded in 104

(60.4%) cases. Age distribution of patients presented with genital trauma as in the following table. (Table 2)

Table 2 Organ involved in trauma of external genitalia				
Age	Number of patients	Penile	Testis and / or scrotum	Female external genitalia
≤10Y	19 (11.04%)	5 (2.9%)	8 (4.6%)	6 (3.4%)
11-20	36 (20.9%)	8 (4.6%)	28 (16.2.7%)	--
21-30	44 (25.5%)	11 (6.3%)	33 (19.1%)	--
31-40	31(18.02%)	18 (10.4%)	13 (7.5%)	--
41-50	26 (15.11%)	15 (8.7%)	11 (6.3%)	--
51-60	13 (7.5%)	4 (2.3%)	9 (5.2%)	--
>60	3 (1.7%)	1 (0.58%)	2 (1.1%)	--
Total	172	62 (36.04%)	104 (60.4%)	6 (3.4%)

Only 6 female cases present to our department were female children below 9 years old sustained blunt trauma at external causing minimal external injury.

All patients of external genital injury underwent the standard trauma evaluation upon presentation, including history and physical examination of the external genitalia beside performing ultrasonic examination and some minimal invasive imaging studies (*like retrograde urethrogram*) as needed for making the proper strategy of management. The management decision of genital trauma patients was depend on the severity of injury, physical findings and hemodynamic stability of patients.

Results:

Testicular And Scrotal Trauma

Out of 166 male cases presented with external genital trauma, testicular and/or scrotum injury were recorded in 104 (60.4%) cases divided as following the number of cases presented with testicular trauma with scrotal injury were 76 (73.07%) and out of 76 cases presented with testicular and scrotal injury 7 (9.2%) cases have associated mild to moderate penile injury (*i.e. Combined trauma*) and only 28 (26.9%) cases resented with only scrotal trauma.

The following table 3 shows the age distribution of testicular and/or scrotal trauma.

Out of 104 cases testicular and/or scrotum injury there were 61 (58.6%) cases in age group between 11 to 30 years old. (Table 3)

Table 3 Age distribution of testicular and/or scrotal trauma			
Age	Number of patients	Testicular trauma	Only scrotal trauma
≤10Y	8 (4.6%)	6 (5.7%)	2 (1.1%)
11-20	28 (16.2.7%)	24 (23.07%)	4 (3.8%)
21-30	33 (19.1%)	23 (22.1%)	10 (9.6%)
31-40	13 (7.5%)	6 (5.7%)	7 (6.7%)
41-50	11 (6.3%)	8 (4.6%)	3 (2.8%)
51-60	9 (5.2%)	7 (6.7%)	2 (1.1%)
>60	2 (1.1%)	2 (1.1%)	--
Total	104 (60.4%)	76 (73.07%)	28 (26.9%)

The table 4 shows laterality of testicular and scrotal injuries according to the number of cases as follow, out of 76 cases of testicular injury there were 21 (27.6%) sustained trauma on right side, and 30 (39.4%) patients sustained trauma on left side while the other 25 patient (32.8%) the injury was bilateral and

regarding isolated scrotal injuries recorded on right, left and bilateral in 28 (26.9%), 7(32.1%) and 12 (42.8%) patients respectively. Most of testicular and scrotal injury was in the middle age group i.e. from 20 to 45 years old (reproductive age group). (Table 4)

Table 4		The side distribution of testicular and/or scrotal trauma						
		Testicular trauma				Scrotal trauma		
Age	Number	No	Right	Left	B/L	No	Right	Left
≤10Y	8	6	1	3	2	2	1	1
11-20	28	24	8	7	9	4	4	--
21-30	33	23	7	10	6	10	2	8
31-40	13	6	2	3	1	7	1	6
41-50	11	8	--	5	3	3	2	1
51-60	9	7	3	2	2	2	--	2
>60	2	2	--	--	2	--	--	--
Total	104	76 (73.07%)	21 (27.6%)	30 (39.4%)	25 (32.8%)	28 (26.9%)	9 (32.1%)	7 (25%)

Because some patients presented by bilateral testicular injury, we found out of 76 cases of testicular injury there were 51 case (*i.e. 51 testes were injured*) has unilateral testicular injury and 25 cases have bilateral testicular injuries (*i.e. 50 testes were injured*) so the total

number of injured cases were 101 testes. The following table 5 shows the number and the side distribution of testicular injured regarding age groups. Out of 101 testes injured there were 46 (45.5%) right testes and 55 (54.4%) left testes. (Table 5)

Table 5 Number and the side distribution of testicular injured			
Age	Number testes injured	Right	Left
≤10Y	8	3	5
11-20	33	17	16
21-30	29	13	16
31-40	7	3	4
41-50	11	3	8
51-60	9	5	4
>60	4	2	2
Total	101	46(45.5%)	55(54.4%)

Regarding to type of trauma the table 6 shows that over 76 cases of testicular injuries 39 (51.3%) patients sustained blunt trauma (*during playing football, fighting or fall down*) while 37 (35.5%) cases sustained penetrating trauma (*stab injury, gunshot injury or fall down over sharp object*) and out 37 cases sustained penetrating injury 11 cases sustained gunshot injury and 1 case sustained shotgun injury and 7 of them have associated penile injury. One case sustained low velocity gunshot injury in a single right testis. Penetrating trauma was recorded in 12

(42.18%) cases of isolated scrotal injury while other 16 (57.1%) cases presented with history of scrotal injury due to blunt trauma. No case was recorded has testicular dislocation after blunt trauma.

The total number of the cases sustained blunt scrotal trauma with or without testicular injury is 55 (52.8%) cases and while the other 49 (47.1%) cases sustained penetration scrotal trauma with or without testicular injury. (Table 6)

Table 6		Types of Testicular and Scrotal trauma					
Age	Total number of patients	NO	Testicular trauma		NO	Scrotal trauma	
			Blunt	Penetrating		Blunt	Penetrating
≤10Y	8	6	3	3	2	1	1
11-20	28	24	14	10	4	3	1
21-30	33	23	7	16	10	6	4
31-40	13	6	4	2	7	2	5
41-50	11	8	3	5	3	3	--
51-60	9	7	6	1	2	1	1
>60	2	2	2	--	--	--	--
Total	104	76	39 (51.3%)	37 (35.5%)	28	16 (57.1%)	12 (42.18%)

The following table (Table 7) shows types of trauma regarding to the number of testes sustained trauma. The result as follow, the total number of testes sustained blunt trauma were 45 testes in 39 patients (6 patients out of 39 patients sustained bilateral testicular injuries i.e. 15.3%), and number of testes sustained penetrating trauma were 56 in 37 patients (19 out of 37 patients sustained bilateral testicular injuries i.e. 51.1%).

Out of 19 patient sustained bilateral penetrating testicular trauma, 11 patients (i.e. 22 testes) sustained gunshot injury and one case sustained shotgun injury to both testes. However the other 7 cases sustained stab testicular the testicular injuries were bilateral. The following table (Table 7) shows that all patients sustained gunshot injury or shotgun trauma, the testicular injury bilateral 12/12 i.e. (100%), while in stab trauma only in 7 cases (out of 25 cases) the injury was bilateral (i.e.

28%). However in case of blunt trauma, only 6 cases (out of 45 cases) having bilateral testicular injury (i.e. 13.3%).

The 6 cases of testicular blunt traumas distributed as follow; 2 case below 11 years old and 4 cases in age group between 11-20 years developed testicular injury, while the 7 cases of stab testicular traumas distributed as follow; 2 case below 11 years, 4 cases in age group between 41-50 years and one case in age group 51-60 years developed testicular injury. As shown in the following table (Table 7) the majority of cases sustained testicular trauma were at age from 11 to 20 years (14 cases and 18 injured testes) while a large numbers of case sustained penetrating trauma recorded at age group between 11 to 20 years (10 case having 15 injured testes) and at age group between 21 to 30 years (16 case having 20 injured testes). (Table 7)

Table 7		Types of Testicular trauma					
Age	Blunt trauma		Penetrating trauma				
	Number of patients	Number of testes	Number of patients	Number of testes			
				Total of testes	Stab	Gunshot	Shotgun
≤10Y	3	5/3	3	5	5/3	--	--
11-20	14	18/14	10	15	5/5	10/5	--
21-30	7	7/7	16	20	12/12	6/3	2/1
31-40	4	4/4	2	4	--	4/2	--
41-50	3	3/3	5	10	8/4	2/1	--
51-60	6	6/6	1	2	2/1	--	--
>60	2	2/2	--	--	--	--	--
Total	39	45/39	37	56/37	32/25	22/11	2/1

All patient sustained trauma to their scrotal with or without testicular injury presented with scrotal pain 104 (100%) with or without other symptoms like obvious scrotal hematoma which seen in 65 (62.5%) cases , fever where

6 (5.7%) cases presented with history of scrotal trauma and fever due to wound infection or infected ruptured testes because these patient came days after trauma, 14 (13.4%) cases come with history of hematuria due to

associated injury of urethra specially in 12 (11.5%) cases of gunshot injury and in 2 (1.9%) cases of straddle injury. (Table 8)

Table 8		Clinical presentations of testicular and/or scrotal trauma			
Age	Number of patients	Pain	Hematoma	Fever	hematuria
≤10Y	8	8	6	--	--
11-20	28	28	11	3	--
21-30	33	33	29	2	6
31-40	13	13	6	--	3
41-50	11	11	4	1	4
51-60	9	9	4	--	1
>60	2	2	2	--	--
Total	104	104 (100%)	65 (62.5%)	6 (5.7%)	14 (13.4%)

The management decision of genital trauma patients was depend on the severity of injury, physical findings and hemodynamic stability of patients.

After full evaluation of the patients sustained scrotal with or without testicular injury, the conservative treatment was advised for 27 (25.9%) cases, [17 (22.3%) of testicular trauma 10 (35.7%) scrotal trauma]. Conservative treatment includes; only dressing, simple stitching of superficial scrotal wall lacerated wound, or just administration of analgesics and antibiotic in cases with small non expanded scrotal hematoma without or with minimal injury of testis. However 77 (74.03%) cases with major testicular and or scrotal underwent exploration treatment. (Table 8)

Regarding to the total number of testes were injured i.e.101 testes, the conservative management (analgesia, antibiotics, bed rest

and clinical follow up) advised for 26 (25.7%) injured testes, however surgical intervention performed for 75 (74.2%) injured testes, of them a reconstruction surgery (*Primary repair of tunica albugenia*) was performed in 54 (53.4%) injured testes where orchidectomy was performed in 21 (20.7%) injured testes. Orchidectomy was performed in 6 cases (6 testes in 6 patients) presented late with sever blunt trauma and in 3 cases (3 testes in 3 patients) presented with stab injury to the testis and involvement spermatic cord; however unilateral orchidectomy is required in 10 testes sustained gunshot injury and bilateral orchidectomy was done in one case of shotgun injury involving both testes. Two cases sustained low velocity gunshot trauma causing minimal testicular injury requires no surgical intervention one of them has single testes. (Table 9)

Table 9		Types of management of testicular injury		
Age	Number of testes	Conservative	Reconstruction	Orchidectomy
≤10Y	8	3	5	--
11-20	33	8	22	3
21-30	29	7	14	8
31-40	7	1	4	2
41-50	11	4	4	3
51-60	9	3	2	4
>60	4	--	3	1
Total	101	26 (25.7%)	54 (53.4%) 75 (74.2%)	21 (20.7%)

Out of 28 cases sustained isolated scrotal wall injury, conservative. Primary scrotal wall repair, excision injured area of scrotal wall with repair, and evacuation of hematoma with scrotal wall repair was required in 10 (35.7%)

patients, 9 (32.1%) patients, 6 (28.4%) patients, 3 (10.7%) patients respectively. (Table 10)

Table 10		Types of management of isolated scrotal wall injury			
Age	Total	Conservative treatment	Primary repair	Excision and repair	Evacuation of hematoma and repair
≤10Y	2	2	--	--	--
11-20	4	4	--	--	--
21-30	10	2	6	1	1
31-40	7	1	2	2	2
41-50	3	--	--	3	--
51-60	2	1	1	--	--
>60	--	--	--	--	--
Total	28	10 (35.7%)	9 (32.1%)	6 (28.4%)	3 (10.7%)

The hospital stay for 104 patients presented with history of testicular and scrotal injuries as follow; nineteen (18.2%) patients treated as OPD cases while 32 (30.7%), 33 (31.7%) and 20 (19.2%) patients stayed in hospital for a period from 1 to 2days, from 3 to 5 days and more than 5 days respectively. The longer hospital stay (>5 days) is required in some

patients have associated urethral injury (7 case special in cases of penetrating trauma) or cases treated conservatively at beginning due to underestimation of the extent of trauma or due to failure of reconstruction surgery which complicated by bleeding and hematoma or abscess formation require exploration and drainage. (Table 11)

Table 11	Hospital stay after testicular and scrotal trauma				
Age	Number of patients	OPD case	1-2days	3-5 days	> 5days
≤10Y	8	2	3	3	--
11-20	28	4	8	16	--
21-30	33	8	8	8	9
31-40	13	3	3	2	5
41-50	11	--	7	1	3
51-60	9	2	3	3	1
>60	2	--	--	--	2
Total	104	19 (18.2%)	32 (30.7%)	33 (31.7%)	20 (19.2%)

Post trauma outcome of testicular and/or scrotum injury

All cases of isolated scrotal wall injuries response well to management and there were no any post trauma complications and one case requires skin graft or flap, because the scrotal skin was less than 60 percent which can be primarily closed, because scrotal tissue is greatly elastic and compliant.

Unilateral orchidectomy was done in 20 (19.2%) cases sustained testicular injury while bilateral orchidectomy was done for one case sustained shotgun injury resulting permanent disability. However, reconstructive surgeries succeed 54 (53.4%) cases with testicular injury with some element of structural and functional disabilities.

Penile Trauma:

Out of 166 male cases presented with external genital trauma, penile injury was recorded in 62 (37.3%) cases, and 7 (11.2%) cases of them has associated scrotal and or scrotal injury. The age distribution of patients sustained penile

injury as in the following table (Table 12), where most of cases [44 cases i.e. 70.9 %] in age group between 21 to 50 years. The distribution of cases of penile injuries according to the types of trauma are 18 (29.03%) patients sustained bullet injury, 9 (14.5%) patients sustained stab injury, 16 (25.8%) patients sustained blunt trauma, 3 (4.8%) patients sustained burn injury, 2 (3.2%) patients sustained animal bite, 2 (3.2%) hair tie, and 5 (8.06%) condom tie. The animal bite occurs in 2 occasions one of them dog bite and the other was rat bite. The other 7 cases sustained different types of trauma like Zipper injury in 3 (4.8%) uncircumcised children, one (1.6%) uncircumcised baby presented with paraphimosis when his father retracted prepuce over the glance, while 2 (3.2%) cases presented as complicating circumcision; one of them presented with partial glanular injury while the other one presented by glanular amputation and self amputation of penis recorded in one (1.6%) psychiatric patient. (Table 12)

Table 12		Types of penile trauma						
Age	Total	bullet	Stab	Blunt	Burn	Animal bite	Hair OR Condom tie	Others
≤10Y	5	--	--	--	--	--	2	3
11-20	8	--	1	2	--	1	--	4
21-30	11	4	--	6	1	--	--	--
31-40	18	10	3	4	--	1	--	--
41-50	15	4	5	4	2	--	--	--
51-60	4	--	--	--	--	--	4	--
>60	1	--	--	--	--	--	1	--
Total	62	18 (29.03%)	9 (14.5%)	16 (25.8%)	3 (4.8%)	2 (3.2%)	7 (11.2%)	7 (11.2%)

The patients who sustained penile trauma presented lacerated wound, penile hematoma, gangrene of glans, amputation of glans, sloughing of penile skin, urethral injury (*causing bleeding per urethra*) and distal penile edema in 33(53.2%) patients, 41(66.1%) patients, 6 (9.6%) patients, 3 (4.8%) patients, 8 (12.9%) patients, 27 (41.9%), 7(11.2) patients. All of blunt traumas were due to fracture penis during sexual intercourse. Amputation recorded in 3 (4.8%) cases, one of them is a case of psychiatry 20 years old presented with self attempt penile amputation (partial amputation) while the other

two (3.2 %) cases of partial amputations were iatrogenic during complicated circumcision. Urethra injury occurs in 27 (41.9%) patients out of them 6 (9.6%) cases due to blunt trauma (*fracture penis*), one (1.6%) case sustain dog bit and injuries the urethra, however urethral injury occurs in 14 (22.5%) case of bullet trauma, 3 (4.8%) cases of stab trauma, 2 (3.2 %) cases post circumcision and one (1.6%) case of self amputated penis. Sloughing of the glans and or penile skin occurs in 8 (12.9%) due to tissue necrosis (*in cases of bullet injury or burn*) or due to infection. (Table 13)

Table 13		Clinical features of patients presented with penile injuries						
Age	Total	L/W	Hematoma	Gangrene	Amputation	Sloughing of skin	Urethral injury	Only edema
≤10Y	5	5	--	1	2	--	2	2
11-20	8	--	8	--	1*	5	--	--
21-30	11	4	6	--	--	1	7	--
31-40	18	10	14	--	--	--	12	--
41-50	15	9	13	--	--	2	5	--
51-60	4	4	--	4	--	--	--	4
>60	1	1	--	1	--	1	--	1
Total	62	33	41	6	3	8	27	7
percent	(100%)	(53.2%)	(66.1%)	(9.6%)	(4.8%)	(12.9%)	(41.9%)	(11.2)

*self amputation of penis by psychiatric patient

The table 14 illustrates the type's management of penile injury where conservative includes bed rest, analgesics, antimicrobial administration and applying dressing and skin care performed in 17 (27.4%) patients, homeostasis and simple stitching of penile injury carried out in 7 (11.2%) cases, reconstructive surgery was performed in 18 (53.4%) cases with or without concomitant urethral injury (*one case presented with post circumcision amputation of glans a trial of reconstructive surgery was performed but*

failed requiring amputation and reconstructive plastic surgery), and out of 16 (25.8%) presented with penile hematomas due to fracture penis 11 (17.7%) cases underwent exploration and evacuation of hematoma. However partial penectomy performed in 1 (1.6%) case presented with already amputated penis (*self-inflicted penectomy and trial of re-implantation is failed*) and in 2 (3.2%) cases of bullet in and 1 (1.6%) case of stab injury (*cutting a part of glans*) while in 5 (8.08%) cases amputation was performed in diabetic

patients develops penile gangrene (*mainly at the glance*) due to condom tie and complicated by infection. The baby who presented with Paraphimosis, the edematous foreskin is squeezed between fingers (to reduce preputial edema) then a gentle and steady pressure is applied to push the foreskin forward to its

normal position. The management of dog bite includes irrigation, debridement, and empiric antibiotics administration, with consideration of tetanus and rabies immunization, and primary wound closure with surgical reconstruction of distal urethra. (**Table 14**)

Table 14 Types of management of penile injury

Age	Number of patients	Conservative and dressing or skin care	Homeostasis and simple stitching	Reconstruction of penis ± urethra	Exploration and evacuation of hematoma	Partial penectomy
≤10Y	5	2	1	1	--	1*
11-20	8	6	1	1	--	--
21-30	11	4	2	2	3	--
31-40	18	3	2	7	4	2
41-50	15	2	1	7	4	1
51-60	4	--	--	--	--	4
>60	1	--	--	--	--	1
Total	62	17 (27.4%)	7 (11.2%)	18 (53.4%)	11 (17.7%)	9 (14.5%)

1* One child 5 years of comes with complicated circumcision and amputated glance

Post penile injury hospital stay is illustrated in the following table (*Table 15*), as follow the hospital stay is not required in 11 (17.7%) cases that treated as OPD cases, 2 (3.2%) case of hair tie, 3 (4.8%) cases presented with Zipper injury, 1 (1.6%) case with paraphimosis, 2 (3.2%) cases with animal bite, 2 (3.2%) cases of low velocity gun injury and 1 (1.6%) case of superficial stab injury. However the hospital is required in a period from 1 to 2 days, from 3 to

5 days, and more than 5 days for 8 (12.9%) patients, 25 (40.3%) patients, and for 18 (24.1%) patients respectively.

The longer hospital stay was one month required for one (1.6%) patient sustained shotgun injury involving testes, penis and urethra require re-exploration and dressing under general anesthesia. (**Table 15**)

Table 15		Hospital stay after penile trauma			
Age	Number of patients	OPD case	1-2day	3-5 days	> 5days
≤10Y	5	3	--	2	--
11-20	8	4	2	1	1
21-30	11	3	1	5	2
31-40	18	1	3	8	6
41-50	15	--	2	6	7
51-60	4	--	--	3	1
>60	1	--	--	--	1
Total	62	11 (17.7%)	8 (12.9%)	25 (40.3%)	18 (24.1%)

Post trauma outcome of penile injury:

All patients sustained penile trauma and managed as OPD cases or required hospital stay less than 3 days [19 (30.6%) cases] discharged without cosmetic or sexual defects. However major penile injuries resulting in permanent cosmetic and or sexual disability mainly in patients underwent pencetomy. Some patient sustained gunshot injury

destructing on corpora cavernousa in one side and conservative repair was performed resulting in curvature of the penis to word the side of injury due to healing with fibrosis. All cases of fracture penis (*with or without urethral injuries*) respond well to surgical repair of tunica albugenia without of functional or structural defects requiring other surgical intervention.

Female External Genitalia:

Because all female patients sustained external genital trauma of sexual abuse attend gynecological department however only 6 female cases present to our department were female children below 9 years old sustained blunt trauma at external causing minimal external injury, 5 of them refereed from gynecological department to evaluated urethral opening and one case attended to our department personally for reevaluation of integrity of hymen. All cases requiring no surgical intervention a part from one uncooperative patient underwent physical examination and cystoscopy under general anesthesia.

Discussion:

At the beginning, a retrospective study was performed from in a period from 2002 to 2009 by reviewing the files of 9278 patients admitted to department of urology, we found that the number cases were 52 cases out of them 43 (82.6%) have testicular and / or scrotal injuries, and the rest of them 9 (17.3%) cases sustained penile trauma. Out of 43 cases sustained testicular and /or scrotal trauma only 3 cases sustained stab penetrating trauma and no one of them sustained gunshot trauma. Regarding 9 penile trauma, only one case sustained stab trauma while the majority of other cases sustained blunt and no one sustained gunshot trauma. However in last 3 years the study was continued as prospective study by recording the admitted cases sustained external genital trauma. After 17 February 2011 the figure was changed dramatically and the number of the cases who sustained external genital trauma increased and reached to 166 cases [104 (60.4%) cases sustained scrotal trauma with or without testicular injury and 62 (60.4%) cases sustained penile trauma] and the types of traumas also changes where gunshot injuries jump from zero (0%) to 12(out of 104 cases) cases and represented 11. 5% of testicular and or scrotal injuries in same manner, the gunshot injuries to the penis jumps from zero case (0%) up 18 cases (out of 62 cases of penile injuries) and represented 29.03% of all cases sustained penile injuries.

Unlike what recorded in other studies, zipper injury of preputial skin injury and paraphimosis are rare; because circumcision done as early as few day (with 1 wk) after deliver.

The priority should be given to reconstructive surgery wither to the injuries penis or testes for structural and functional purpose however, the complications like infection and necrosis of testicular tissue my inquiring orchidectomy are rare.

Conclusion:

Testicular and Scrotal Trauma:

- The most common causes of blunt testicular trauma are motorcycle accident or kicking during sport activity.
- The patient always presents with history of obvious trauma and testicular pain associated with history of nausea and vomiting.
- Surgical repair (salvage) in case of sever blunt testicular trauma is the role because
 1. The goal of treatment of the injured testis is to preserve maximal testicular tissue.
 2. Surgical exploration may result in less morbidity than watchful waiting.
 3. Early exploration offers the patient his best chance for testis salvage.
 4. Orchidectomy is required if the testis is badly injured.
- Indications of exploration and repair
 1. Significant hematocele.
 2. Frank rupture of the tunica albugenia.
 3. If there is any doubt that more than a simple contusion is present.
 4. Ultrasonic detection of testicular tear or intratesticular hematoma.
- Despite of hematocele, testicular trauma can be managed conservatively with close follow up, providing that tunica albugenia is intact and there is no evidence intratesticular hematoma.
- Missing intratesticular hematoma may result in testicular infection and/or necrosis that may require orchidectomy.
- All penetration injuries should be explored in order to repair tunica albugenia and drainage of the hematocele.
- Debridement of all extruded and devitalized seminiferous tubules and primary closure tunica albugenia by absorbable sutures will save injured testis.
- Surgical exploration of penetration trauma decreases the morbidity.
- Self-castration is common in psychotic patients, unlike penis; the testes can tolerate prolonged periods of warm ischemia before re-implantation.
- Testis re-implantation is sophisticated and time consuming microscopic surgery.

- Dislocation of testis is resulting from a sudden force that pushes the testicle upward through the inguinal canal.
- Gentle milking of the dislocated testis to scrotum is successful in most of the cases.
- If the dislocated testis is not returned to normal position or rupture is suspected, the exploration is needed.
- Most burns of the scrotum or perineum are of first and second degrees, thus only topical antibiotics and wound care will facilitate their healing. The wound debridement is rarely required.
- Scrotal skin avulsion of less than 60 percent can be primarily closed, because scrotal tissue is greatly elastic and compliant and if more than 60% of scrotal skin is lost immediate reconstruction with skin graft is advised. However complete scrotal skin loss can be managed by placing both testes in subcutaneous thigh pouch that subsequently reconstructed as scrotum.

Penile Trauma:

- Tear of suspensory ligaments caused by sudden downward flexion of the erected penis. The patient gives history of a snap sound at time of trauma followed by pain at the base of penis. Local examination reveals minimal or no hematoma. The purpose of treatment is to provide penile stability during intercourse.
- A hair or condom tie may result in strangulation and laceration of penile skin, which may be complicated by urethrocutaneous fistula, the treatment includes removal of causative object and wound care and urethrocutaneous fistula can be managed accordingly.
- Penile fracture or corporeal cavernosa injury usually results from blunt trauma to erected penis.
- In case of fracture penis, urethral injury is suspected whenever the blood is seen at the external meatus which requires immediate surgical repair.
- Small nonexpanding hematoma requires no treatment other than sedation, ice pack, and pressure bandages.

- The main goal of treatment of the penile fracture is to prevent penile deformity and preserve erectile function.
- Potency is usually maintained in most of the patients after surgical repair of the fracture penis.
- Conservative management of the penile fracture is usually not recommended because of
 1. Prolonged hospital stay.
 2. The tear may be healed with deformity (penile curvature).
 3. Chronic penile painful swelling.
- Penile amputation can be self-inflicted (psychiatric patient) or caused by machinery injury requires early re-implantation.
- Penile injuries from high velocity missiles are often extensive, requires staged repairs and occasionally penectomy may be required.
- Penile shaft skin is more prone to sustain full thickness burn.
- Because an isolated burn to the penis is rare, the child abuse is suspected when he sustained isolated penile burn.
- Debridement and immediate reconstruction by skin grafting may be required in full thickness skin burn recommended.
- Burned glans usually heals spontaneously.
- Simple cutaneous injuries to the penis caused by zipper injury to foreskin of non-circumcised children can be treated conservatively by opening the zipper or by separation of two parts of zipper by strong forceps, however circumcision may be required.
- Victims tend to seek medical care quickly. Thus, morbidity is directly related to the severity of the initial wound and delayed infectious complications appear to be minimal. Guidelines for management include irrigation, debridement as necessary, empiric antibiotics, consideration of tetanus and rabies immunization, and primary wound closure or surgical reconstruction.

References:

1. Cass AS. *Testicular trauma. J Urol* 1983; 129: 299–300.
2. McAninch JW, Kahn RI, Jeffrey RB, Laing FC, Krieger MJ. Major traumatic and septic genital injuries. *J Trauma* 1984;24: 291–8.
3. Cass AS, Luxenberg M. Testicular injuries. *Urology* 1991; 37: 528–30.
4. Seng YJ, Moissinac K. Trauma induced testicular torsion. a reminder for the unwary. *J Accid Emerg Med* 2000;17:381–2.

5. Gomes CM, Ribeiro-Filho L, Giron AM, Mitre AI, Figueria ER, Arap S. Genital trauma due to animal bites. *J Urol* 2000; **165**: 80–3.
6. Feder M, Sacchetti A, Myrick S. Testicular dislocation following minor scrotal trauma. *Am J Emerg Med* 1991; **9**: 40–2.
7. Schwartz SL, Faerber GJ. Dislocation of the testes as a delayed presentation of scrotal trauma. *Urology* 1994; **43**: 743–5.
8. Shefi S, Mor Y, Dotan ZA, Ramon J. Traumatic testicular dislocation. a case report and review of published reports. *Urology* 1999; **54**: 744.
9. Aboseif S, Gomez R, McAninch JW. Genital self-mutilation. *J Urol* 1993; **150**: 1143–6.
10. Albert NE. Testicular ultrasound for trauma. *J Urol* 1980 October; **124**: 558–9.
11. McConnell JD, Peters PC, Lewis SE. Testicular rupture in blunt scrotal trauma. review of 15 cases with recent application of testicular scanning. *J Urol* 1982; **128**: 309–11.
12. Lupetin AR, King W, Rich PJ, Ledereman RB. The traumatized scrotum. Ultrasound evaluation. *Radiology* 1983 ; **148**: 203–7.
13. Lewis CA, Mitchell MJ. The use of real-time ultrasound in the management of scrotal trauma. *Br J Radiol* 1991; **64**: 792–5.
14. Kukadia AN, Ercole CJ, Gleich P, Hensleigh H, Pryor JL. Testicular trauma. potential impact on reproductive function. *J Urol* 1996; **156**: 1643–6.
15. McCormack JL, Kretz AW, Tocantis R. Traumatic rupture of the testicle. *J Urol* 1966; **96**: 80.
16. Mansi MK, Emran M, El-Mahrouky A et al. Experience with penile fractures in Egypt. Long term results of immediate surgical repair. *J Trauma* 1993; **35**: 67–70.
17. Orvis BR, McAninch JW. Penile rupture. *Urol Clin North Am* 1989; **16**: 369 – 75.
18. El-Bahnasawy MS, Gomha MA. Penile fractures. The successful outcome of immediate surgical intervention. *Int J Imp Res* 2000; **12**: 273 – 7.
19. Wiswell TE, Geschke DW. Risks from circumcision during the first month of life compared with those for uncircumcised boys. *Pediatrics* 1989; **83**: 1011 – 5.
20. Gluckman GR, Stoller ML, Jacobs MM, Kogan BA. Newborn penile glans amputation during circumcision and successful reattachment. *J Urol* 1995; **153**: 778.
21. Ozkan S, Gurpinar T. A serious circumcision complication. Penile shaft amputation and a new reattachment technique with a successful outcome. *J Urol* 1997; **158**: 1946 – 7.
22. Tank ES, Demuth RJ, Rosenberg S. Reconstruction following amputation of the penis in children. *J Urol* 1982; **128**: 386 –8.
23. Gomes CM, Ribeiro-Filho L, Giron AI, Mitre AI, Figueira ERR, Arap S. Genital trauma due to animal bites. *J Urol* 2001; **165**: 80 – 3.
24. Wyatt JP, Scobie WG. The management of penile zip entrapment in children. *Injury* 1994; **25**: 59 – 60.
25. Singh B, Hong K, Sandor HW. Strangulation of the glans by hair. *Urology* 1978; **21**: 170 – 2.