EPIDEMIOLOGICAL STUDY OF HYPOSPADIAS

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Summary ;

An analysis of 76 cases of hypospadias of all types treated during the period 1975 to 1980 is presented. The mean number of new patients attending the outdoor per year was 13.2. Maximum number of cases (41 percent) presented during first five years of their life. Four percent of the cases had chordee without hypospadias. Seventy Three percent cases belonged to distal types and 27 percent to proximal types. The various morphological features were noted in detail. Associated penile hypoplasia was seen in high percentage of cases and 6 per cent cent patients with hypospadias of proximal types had bifid scrotum.

Introduction

Hypospadias is the commonest congenital anomaly of the urethra and penis, in which the urethral meatus is located in an abnormal position on the ventral surface of the penis or in the scrotum or the perineum. It presents with various morphological features of the male genitalia and is often associated with other congenital anomalies. This study was undertaken to evaluate the clinical features of 76 cases of the hypospadias over a period of five years, as regards the type of hypospadias, various morphological features and associated anomalies.

Material and Methods

A five year study of the patients with hypospadias treated in the plastic surgery section of the University Hospital, I. M. S., B. H. U. from May 1975 to April 1980, has been done. At the time of first visit a detailed history was taken and all the clinical findings were noted, a pre-operative clinical photograph showing the meatal opening and a micturating photograph was taken. In addition to the routine investigations, an intravenous pyelogram and micturating cystourethrogram was done in some cases.

Observations

Table 1 shows the outpatient attendance of new cases. An average of 13.2 new cases are attending the O. P. D. per year.

Table 1.

Number of patients seen in the outpatient

Year	Number of cases
1975-76	12
1976-77	13
1977-78	14
1978-79	21
1979-80	16
Total	76

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The age at presentation was variable. Out of a total af 76 cases, the maximum number of cases, i. e. 31 (40.78 per cent) presented upto 5 yrs. of age, 21 cases (27.63 percent) presented between 6-10 years, 15 cases (19.47 percent) presented between 11-15 years of age, and the minimum number of cases i. e. 9 (11.81 per cent) presented beyond 16 years of age. Out of the nine patients presenting late in life, two were mentally retarded (Table 2).

Table 2.

Age at presentation

Age	Number of cases	Percentage
in years		
1—5	31	40.78
6—10	21	27 63
11—15	15	12.47
> 16 yrs	9	11.81
Total	76	

The family tree could be available in a total of 37 cases, out of which 25 cases (67.54 per cent) were the first male sibling, 8 cases (21.62 per cent) were the second male sibling, 3 cases (8·10 per cent) were the 3rd male sibling and 1 case (2.70 per cent) was the fourth male sibling (Table 3).

Table 3.

Position in family

Position	No. of cases	Percentage
First male sibling	25	67.54
Second male sibling	8	21.62
Third male sibling	3	8.10
Fourth male sibling	1	2.70
Total	37	

Family history was positive in one case (2.70 per cent) out of a total of 37 cases, where the younger bother of the patient was suffering form the same disease.

3 out of 76 cases (3.94 per cent) were diagnosed as chordee without hypospadias (congenital short urethra) (Table 4).

Table 4.

Type of hypospadias

Type	No. of cases
Hypospadias with chordee	73
Chordee without hypospadias (Congenital short urethra)	3
Total	76

Out of a total of 73 cases of hypospadias with chordee, 53 cases (72.64 per cant) belonged to distal types, and 20 cases (27 39 pet cent) belonged to proximal types The different sites were as follows : perineal 1 1.36 per cent), scrotal 3 cases (4·10 per cent) penoscrotal 16 cases (21.91 per cent) mid penile 20 cases (27.39 per cent), distal penile 24 cases (32.87 per cent) and coronal 9 cases (12.32 per cent) (Table 5).

Table 5.

Site of urethral meatus

Site of Meatus	No. of cases	Percentage
Proximal types—	(20 cases)	27.39%
Perineal	1	1.36
Scrotal	3	4.10
Peno-scrotal	16	21.91
Distal types—	(53 cases)	72.60%
Mid penile	29	27.39
Distal penile	24	32.87
Coronal	9	12.32
Total	73	
Chordee without hypospadias	3	
Grand total	76	

The size of the penis was noted in 64 cases, out of which the penis was hypoplastic in 40 cases (62.50 per cent) and in the rest 24 cases (37.30 per cent) penis was considered to be of normal size.

Clinical assessment of degree of chordee was done as mild, moderate and severe. Out of a total of 56 cases, where it was mentioned, chordee was mild in 29 cases (51.78 per cent), moderate in 12 cases (21.42 per cent) and severe in 15 cases (26.78 per cent).

Prepuce was forming a dorsal hood in all the 73 cases (100%) of hypospadias with chordee. In patients with chordee without hypospadias, the prepuce did not show any anomaly.

Out of a total of 72 cases, where it was recorded, 9 cases (12.50 per cent) had hypoplastic scrotum, the rest 63 cases (87.50 per cent) had normal size scrotum. 5 out of 73 cases (6.84 per cent) of hypospadias with chordee had a bifid scrotum. One of it was associated with perineal hypospadias (20 per cent), three with scrotal hypospadias (60 per cent) and another one with penoscrotal hypospadias (20%). Normal size testes were seen in 54/60 cases (90 per cent), while it was hypoplastic in 6/60 cases (10 per cent). In 2/76 cases (2.63 per cent) testes were retractile, and in 1/76 cases (1.36 per cent) unilateral absence of testes was seen. Hernial orifices were found to be normal in all 76 cases and no other congenital anomaly was seen (Table 6) except unilateral absence of testis in one case (1.36 cent).

Table 6.

Morphology

Morphology	No. of cases	Percentage	Total cases
Penis			
Normal size	24	37.30	64
Hypoplastic	40	62.50	
Degree of chordee			
Mild	29	51.78	
Moderate	12	21.42	56
Severe	15	26.78	
Prepuce			
hooded	73	100.00	73
Scrotum :			
Normal	63	87.50	72
Hypoplastic	9	12.50	
Bifid	5	6.84	73
Testis			
Normal size	54	90.00	60
Hypoplastic	6	10.00	
Retractile	2	2.63	76
Absent	1 (unilateral)	1.36	76
Hernial orifices Normal in all cases			
Other congenital anomaly	1	1.36	76

The urethral meatus was inadequate in 32/76 cases (42.10 per cent) and these cases were subjected to meatotomy.

Cystourethrograms and intravenous pyelograms were performed in 17 cases only. Positive findings were seen in 2 cases (11.76%). One case (5.8 per cent) had some evidence of cystitis with an adequate meatus and another case (5.88 per cent) had a right sided double ureter without any urological problem. Rest of the X-rays of 15 cases (88.23%) were reported to be within normal limits. Further study of this aspect is in progress and will be reported later.

Discussion

The present study illustrates some of the aspects of hypospadias, one of the common congenital anomaly, presenting in various forms and at various ages for the treatment.

In our series 67.54 per cent of sufferers were the first male sibling in the family and the incidence decreased rapidly from 2nd to 4th male sibling. We interpret, therefore, that it is the first male child who is at maximum risk, while the incidence goes down in successive children.

The exact role of various factors responsible for producing hypospadias are not clearly known. Some authors have reported the role of heredity in 12 percent of hypospadias (Bederman, 1979). Ross (quoted by Horton, 1971) noted that 14 per cent of all patients gave the history of more than one haypospadias problem occurring in the same family : There is no evidence that maternal disease during pregnancy has contributed to the formation of this condition. Sorenson (quoted by Horton, 1971) feels that hypospadias is transmitted by a recessive gene. Modern chromosomal studies have shown no defect characteristic of this genital anomaly, but techniques now available show only gross abnormalities in the chromosome (Horton, 1971). In the present series only in one patient, there was positive family history of hypospadias. Probably some other extrinsic or intrinsic factors play their role in causation of this anomaly.

In our series, majority of the cases presented within five years of their age for treatment. Other authors (Avellan, 1980; Horton & Devine, 1977) have also oberved the similar findings. This is because parents of most of the patients are conscious about this defect and they want that deformity should be corrected before the child goes to school. Patients presenting in later age group may be because of ignorance and lack of proper counselling.

Morphology of hypospadias has been described as early as 1886 by Kaunfmann, who presented a detailed description of the morphology of hypospadias and classified the anomaly according to the primary location of the meatus as glandular, penile or perineal. This classification cannot be applied to the so-called chordee without hypospadias or congenital short urethra without hypospadias in which there is a normally situated meatus on the tip of the glans or slightly below the tip and a ventral curvature and which was first described by Sievers (1926). Van der Meulen (1971) introduced the term 'Cryptospadias' and Dickie and Sharpe (1973) named these forms 'crypto-hypospadias'.

As regards the clinical features, the meatus showed varying morphology making it difficult to determine its calibre. The border line between stenotic and a non-stenotic meatus is classified as adequate or inadequate. In patients with glandular hypospadias, the mildest and the most common type, 62 per-

cent of all cases (Avellan, 1975), the meatus was judged to be adequate in 91 per cent of cases. In present series, meatal stenosis was present in 42 per cent of patients which required surgical correction.

In present series 72 per cent of cases had site of meatus distal to the mid penile area. This is an agreement with the findings of other workers (Avellan, 1976, 1977, 1980).

Severe hyposplasis of the penis was noted in 24 per cent of patients, which is not in agreement with other workers (Ross et al., 1959), and Avellan (1976), who observed penile hypoplasia in about 10 per cent of their patients.

The presence of chordee of varying degree was noted in all patients of present series, while in the series of others chordee was noted in about 70 per cent of the cases (Avellan, 1980) and Ross et al., 1959). This difference may be probably due to patients, only with comparatively severe deformity attend the hospital for surgical treatment.

In present series prepuce was deficient on the ventral surface of the penis in all the patients of hypospadias, except in the cases of chordee without hypospadias. Similar observations have also been made by Horton and Devine (1977) and others.

Cryptorchism was present in one patient of present series, however, this finding was reported around 10 per cent in the series of Kennedy (1959) and Avellan (1980). The incidence of cryptorchism is said to be increasing with increasing severity of hypospadias (Avellan, 1980).

Six per cent patients, who had scrotal or perineal hypospadias had bifid scrotum. Similar observations have been made by other workers also (Avellan, 1980). In none of our patients there was penoscrotal transposition as reported by Avellan (1980).

Hypospadias can occur without chordee and chordee can occur without hypospadias. The latter is more frequent than the former, and Horton and Devine (1977) have reported 6 per cent incidence of chordee without hypospadias. In present series, this deformity was present in 4 percent of the cases of hypospadias. In these cases, the urethral meatus emerges at the tip of the penis, however, severe chordee is present.

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