Orchidopexy in a Military Hospital

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SUMMARY: A retrospective analysis of 53 consecutive cases of orchidopexy performed at the British Military Hospital Munster between 1984 and 1988 showed that the average age of referral for orchidopexy was 4 years 7 months and that the average age at surgery for mal/un-descended testes was 5 years exactly. Sixty-four percent of all orchidopexies were carried out before the age of 5 years; 8 percent were carried out by the age of 2 years.

Introduction

A knowledge of the normal processes of formation and descent of the testis and its attachments is of help in understanding the abnormal.

The testis develops on the posterior abdominal wall, overlying the mesonephros. Distal to this a column of mesenchyme builds up, initially as a fold, connecting the testis to a gap in the developing abdominal muscles, the future inguinal canal. Differentiation of the body wall muscles and a little later the fasciae leaves the mesenchymatous gubernaculum running from testis to scrotum. Testicular descent requires not only the establishment of the gubernacular components and the presence of interstitial cells capable of androsteroid production, when stimulated by gonadotrophins, but also a free mesenchymatous pathway. Fibrous encroachment on the mesenchyme may cause tethering of the testis if partial, or obstruction to its descent if complete. Descent is thought to be effected by a combination of the relative lack of growth of the gubernaculum compared with the rest of the body^{1,2}, and an increase in intra-abdominal pressure, gently expelling the testes from the abdominal cavity into the scrotum following the path of the gubernaculum³. Completion of this normal process is necessary for normal testicular function⁴.

Maldescent of the testis may be classified using various terminologies. For the purpose of this paper a testis that has failed to complete its passage to the scrotum, but remains on the normal line of descent, is referred to as undescended. Any testis which spontaneously takes up a position away from the normal line of descent can be regarded as ectopic. Together they may be considered to be maldescented⁵. If an inguinal

pouch testis can be coaxed into the scrotum it is tethered; if not, it is obstructed³.

Operation in early childhood is generally accepted treatment for undescended and ectopic testes. Testes which lie in the low scrotal position and which retract readily to or toward the external inguinal ring probably do not require operation³, although there is some evidence that maturation may not be normal in a testis described as "retractile".⁶

A testis that has not reached the bottom of the scrotum by the first six weeks of life (three months in a premature infant) appears to remain permanently higher than its fellow. It is now accepted practice for orchidopexy to be carried out by the age of 2 years in order to allow for their normal development and function⁷.

The aim of our retrospective study was to discover whether orchidopexy in the military community is being carried out by an acceptable age?

Patients and Method

A retrospective study was undertaken of all orchidopexies carried out at the British Military Hospital Munster in the 4 year period between January 1984 and February 1988. Fifty-three cases were identified and studied. In all cases it was established when the patient was referred for surgery and when surgery was undertaken. It was often not possible to establish whether the condition was recorded at birth as the post-natal notes were unavailable in patients born in other hospitals. The date of the first referral letter was often the first mention of the condition in the medical records. This suggests the possibility that the abnormal descent was not noticed, or indeed, not present at birth.

Results

Of the 53 cases studied the average age of referral was 4 years 7 months. The youngest patients were referred for surgical opinion during the peri-natal period. The youngest patient operated upon was aged 1 month, the indication for surgery being a large congenital hernia. Fourteen patients had bilateral maldescent. Forty-seven percent of the maldescented testes were associated with herniae.

The average age at surgery was 5 years exactly. The delay from referral until surgery was acceptable in most cases, the median figure being 3 months. The mean delay was artificially inflated by two patients who were lost "in the system" and had their surgery delayed by 41 and 46 months respectively. One of these patients was a civilian whose parents had been reassured in the UK that his testes would drop on their own. Since moving to BAOR the patient had not attended for review and his condition was unknown to the military medical services. Surgery was undertaken promptly once his new general practitioner became aware of the situation.

Three other patients experienced lengthy delay in surgery once they had been referred. The intervals in these cases were 21, 22 and 23 months respectively. The delay was due to specialist clinicians, one paediatric and two surgical, waiting to see if spontaneous resolution would occur in patients with high "retractile" testes.

Table 1

Age at referral and surgery for abnormal testicular descent

Age in months (years)	No: referred	No; at surgery
0-6	4	2
7-12	3	0
13-18	2	1
19-24	2	1
25-36 (2)	8	7
37-48 (3)	8	14
49-60 (4)	9	9
61-72 (5)	6	3
73-84 (6)	2	4
85-96 (7)	3	5
97-108 (8)	2	2
109-129 (9)	2	2
121+ (10+)	2	3
	—	—
	53	53
	—	—

Discussion

In the past it was generally accepted that maldescented testes should be fixed in the scrotum by puberty and many advocated between the ages of 6 and 8 years⁵.

There has been no universally accepted classification of maldescent and uncertainty in such cases as to whether testicular abnormalities are the cause or effect of the abnormal descent. Discussion has inevitably been based on fragmentary evidence and Whitaker¹⁰ noted the lack of a report correlating fertility with age at orchidopexy. Recent work evaluating the fertility of 45 men after late spontaneous descent of previously maldescented testes found only 33% to have normal fertility, as estimated from the results of total semen analysis¹¹.

The association of testicular malignancy and maldescent of the testis is well established³. Some 10 percent of all germinal cell tumours arise in maldescented testes, with the highest incidence affecting intra-abdominal organs¹².

If the testis are left at the higher temperature of the body long enough, normal maturation is severely retarded. The scrotum and cremaster act as a thermo-regulator, keeping the testis a degree or two cooler than normal body temperature, and it is generally accepted that the degeneration of seminiferous tubules in maldescent is at least partly, and in ectopic testes mainly, due to their location in positions of higher temperature. The maldescented testis shows retardation of growth of tubular diameter and reduction of spermatogonia content and, at puberty, failure of spermatogenesis together with peritubular fibrosis^{3,4}.

It has been noted that the higher the testis resides above the scrotum, the more dysgenetic the morphology is likely to be¹³. Mengel et al¹⁴ showed that degeneration could begin at 2 years. In a study of biopsies from 515 maldescented and 237 unilaterally descended testes, the spermatogonia content (the number of spermatogonia in 50 tubules) started diminishing from 2 years of age. In no case was there complete loss of the germinal epithelium before the age of 2.

Histological appearances can improve after orchidopexy. In a series of 29 bilateral orchidopexies done one at a time with an interval of at least a year, Kiesewetter, Shull and Fetterman⁴ took bilateral biopsies on each occasion. They used the following criteria in evaluating the histology: 1) number of tubules; 2) size of tubules; 3) degree of layering of tubular cells; 4) amount of interstitial tissue; 5) presence or absence of interstitial (Leydig) cells; 6) presence or absence of spermatogonia; 7) state of germinal activity. They found moderate to marked improvement in 52% following successful orchidopexy. Hecker and Hienz¹⁵ reported similar findings.

Fonkalsrud¹³ concluded that the maldescented testis does not mature normally after the age of two years and

may produce adverse effects on the contralateral descended testis, possibly by an auto-immune mechanism.

Functional, psychological and oncogenic considerations all point towards orchidopexy well before 5 years of age, and we consider that, based on evidence presented here, surgery should ideally be carried out before the second birthday. Even though fertility often follows bilateral orchidopexy in late childhood, in other patients irreversible degeneration may take place soon after 2 years of age¹⁴. Some testes may be inherently inferior, but it is impractical to confirm this, so correction should not be delayed¹⁶. This argument is further supported by the recent work of Bremholm Rasmussen¹¹ documenting normal fertility in only 33% of males following spontaneous descent of bilateral maldescended testes after the age of ten.

Psychologically the optimum time for operating is the first 6 months of life. Separation from mother is most detrimental from 6 months to 4 years¹⁷, and ideally the mother should be with the child during his stay in hospital. There is some evidence that orchidopexy carried out before 2 years of age may reduce the risk of malignancy¹⁸, but not all agree that this is certain¹⁹.

In the light of available evidence there is a strong case to be made for operation around 2 years of age. The best hope for fertility depends on achieving the maximum potential of both testes. There is no good reason why surgery should be delayed despite the alleged technical difficulties of operating on young patients, as early surgery may prove to be important in reducing the risk of subsequent malignant change, and improving subsequent fertility. The presence of a hernia is generally accepted as an indication for early operation whatever the age.

In practice, too many children are already at school when first seen. In this survey 63% of the children underwent corrective surgery before the age of 5 years, a figure which compares favourably with the figure of 9% obtained by Bishop and Whitaker²⁰. Only 8% of the operations were carried out before 2 years of age, and these were all performed within the last 18 months of this survey. This reflects the surgical practice of the consultant surgeons in post during this period.

The conclusion that can be drawn from this survey is that, although orchidopexies at this hospital are performed at ages that have been previously acceptable, there is a strong case for performing surgery much earlier. To this end it should become the normal practice for a child with maldescent to be referred for surgery as soon as the condition is diagnosed even in the neonatal period.

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