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Our primary surgical treatment for anorectal anomalies regarding continence

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The most important step in the teratment of anorectal malformations regarding later continence is to choose a surgical procedure which is adaquate to the type of the malformation which has to be corrected.

Only during that primary approach it is possible to identify exactly all muscles structures necessary to achieve continence and to use them for the reconstraction of sphincter mechanisms.

A presupposition for an adaquate surgical approach is an complete and correct diagnosis of the type of malformation, the level of the blind rectal pouch in projection of the PC, M and J-line, of the course of a probable fistula as well as of the morphology of associated urogenital or sacral anomalies. Another important assumption for a good result is a careful and smooth surgical intervention done by an experienced surgeon.

Diagnosis

As we have allready mentioned in a previous paper (Engelskirchen et al. 1969) at the Hospital for Sick Children in Cologne, 448 patients with anorectal malformations were treated from 1963 to December 1988. Our diagnostic procedure in these children included:

Carefull clinical investigation at birth and 24 hours later, Ray-studies of a probable fistula and/or voiding cystography with lateral view or of the pelvis, os sacrum and rectal pouch, a puncture of this blind rectal pouch and an ultrasonography of the upper urinary tract.

Associated skeletal, cardiac, neurologic, urological and other malformations need further studies. To fix the diagnosis we have 24-30 hours time.

During that interval we have to recognize whether a fistula can be detected at the genitalias or perineum or if meconium is delivered through the vagina or urethra.

A hypospadia with scrotal or meatal fistula is allways suspicious of an intermediate type of anorectal agenesis with rectoscrotal of rectobulbar fistula.

In girls a vestibular fistula may be an ano-or recto-vestibular fistula and it is therefore necessary to perform an X-Ray-study to determine the length of the fistula and the level of the rectal pouch.

In low types of anorectal agenesis we perform a perineal proctoplasty which means resection of a probable fistula and pull-through of the blind end of anal channel through the electrostimulated external sphincter fibres. In addition we perform a proctodeal flap-plasty according to Nixon (1967).

In girls with anovestibular fistula a modified Pott's procedure a so called anterior sagittal approach is performed with adaptation of the levator and bulbo-cavernosus muscles anterior to the anus for rebuilding a perineal body.

If no fistula could be detected 24 h after birth, a voiding-cystography-has to be done. If a rectourethral or rectobulbar fistula could be seen a pri-

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mary colostomy at the level of the right hepatic flexure is created. In patients with rectobulbar, deep rectovaginal or rectourethral fistula with a rectal pouch ending below the P-C-Line a posterior sagittal approach according Pena (1982, 1985) and De Vries (1982, 1984) with Nixon-Plasty is established at the age of 3 to 4 months.

If no fistula could be observed 24 hours after birth an upside down abdominal plane X-Ray-study is performed. The distance of the blind ending rectal pouch in the crying and pressing child with the legs pushed into its belly to the anal dimple, is estimated and if the distance is less than 2 cm a perineal puncture probably under ultrasonsgraphic control is done. If the level is higher a primary colostomy should be established.

One should avoid to place contrast material outside of the rectal pouch or inside the rectal wall which is leading to necrosis. In high type anorectal malformations according to the Wingspread classification (Stephens and Smith 1988) or the types A and B according to Rehbein (1976), an abdomina-sacro-perineal pull-through is performed at the age of 3 to 4 months. This schedule is widely accepted in our days pediatric surgical units. Nevertheless in earlier times there have been a few patients in whom these clear cut principles have not been followed on.

From 1962 to 1970 in 26 out of 92 patients (15 %) operated on in our hospital a low level anorectal malformation was incorrectly diagnosed instead of a high anorectal agenesis. In these 26 children an unnecessary colostomy was performed. In 5 (3 %) other children a high type anomaly was misdiagnosed and a perineal approach was tried.

From 1971 to 1984 this situation improved very much to 3,5 % and since 1984 we have had no misdiagnosis any more.

But not only mistakes in the diagnosis are asking for trouble concerning later continence also malformations and malpositions of muscular structures of the pelvic floor are responsible for incontinence problems after surgical correction.

Striatet muscle complex

The striated muscle complex described by de Vries (1982, 1984) and Pena (1982, 1985) is not always well developed. Out of that the muscle fibres sometimes have no circular arrangement and can be stimulated anterior to its normal position close to the vaginal orifice or scrotum. It is difficult to reconstruct a perineal body and to push back the muscle complex structures without damaging their blood supply. In these cases a primary ectopic anal orifice could be pushed back in a second procedure by a Burrington plasty. In high types of anorectal agenesis a gap exists between the muscle complex and the funnel of the pelvic floor muscles which is the longer, the higher the rectal blind pouch is situated (Stephens and Smith 1971, 1988).

Between the plevic floor funnel and the muscle complex fibres one may sometimes only find remnants of a very few muscle fibres and parts of Waldeyer's facia. What shall one do with those few and hypoplastic muscle structures?

We perform in these patients a smooth muscle flap palsty (Holschneider and Hecker 1981), well knowing that we can nor have probably to perform an additional continence improving operation (Holschneider 1979, 1989).

Out of that it seems to be of advantage to reattache the muscle-complex structures to the plevic floor funnel for achieving not only a circular contraction but also an up-and-down-movement of the pelvic floor which might be important to avoid mucosal prolaps and to reinforces also circular muscle contractions.

The mucosa of the pulled down colon has to be fixed at these muscle structures because it is sliding on its surrounding muscular coat and no more fixed by longitudinal muscle fibres penetrating the sphincter and the mucosa like in normal individuals.

Unfortunately also regarding all these details mu-

cosal prolaps remains one of the most frequent complications in high and intermediate type anorectal malformations and we still need a satisfactury procedure to avoid it.

Smooth muscle

Schärli uses the coat of the blind rectal pouch for internal anal sphincter reconstruction and this might be helpful (Schärli 1987) [18]. However in patient in whom a Rehbein-Roumaldi-procedure could be performed, the blind rectal pouch is situated so deeply down in the pelvic floor, that it can be reached by a sacral approach. In these children the levator and muscle complex structures are well developed and no additional sphincter plasty seems to be necessary. On the other hand, in the really high types of anorectal agenesis, the funnel shaped rectum is not a pouch but leading as a long fistula to the suprasphincteric urethra or bladder neck. According to Rehbein it semed to be better in these cases to take off the fistula and rectal structures from the urethra and to pull it down to the perineum instead of excavating the mucosa according to the Rehbein-Roumaldi-procedure.

It seemed hardly possible to use the smooth muscle fibres surrounding the recto-urethral fistula as an internal sphincter equivalent. The existence of these smooth muscle fibres has been shown radiologically by Kelly (1969), manometrically by Schärli and Kiesewetler (1969) and us (Holschneider 1983) and anatomically recently by Lamprecht and Lierse (1987).

To use this fibres as an internal sphincter equivalent it would be necessary to elongate the anterior or to shorten the posterior wall of the rectal funnel by additional procedures. In every case the question remains open whether the peri-fistular sphincter structures will be strong enough to function as an internal sphincter equivalent.

Anatomical studies of Yokohama (1985) and Stephens (1988) are leading more to the impression that the smooth muscle structures become the thinner the higher the level of the malformation is situated. That's the second reason why we still are ongoing to perform smooth muscle flap-plasties in these fortunatly rare cases of high anorectal agenesis.

Proctodeum

A last difficult and important point in the correction of anorectal malformations is the reconstruction of the proctodeum. One could achieve the best results with the skate-flap-plasty according to Nixon (1967). This method or Mollard's technique [9] seemed to be the only procedure with which proctodeal skin flaps could be brought easely and without tension into the anal channel.

We perform this procedure in all of our patients with anorectal malformations undependent of the type and level of the anomaly.

Conclusion

To conclude, one has to be aware that a cupple of operations used in earlier times such as the cut back procedure, the YV-plasty, the abdomina-perineal pull-through procedure, Pott's procedure without anterior levator plasty should not be used any more with the advent of more detailed and sophisticated radiologic investigations and anatomy related surgical techniques. The intermediate type of anorectal anomalies which was deniel several years was newly detected by Peter de Vries and Alberto Pena's anatomical studies. It is unfortunately to earlier to get definitive continence results from our own patients treated with these more detailed surgical approaches because we started with the mentioned techniques not before 1984.
However the results of Pena and de Vries techniques are promosing although Pena in his 1988 report observed soiling in 20 % of the girls with vestibular fistulas, 61 % of the patients with recto-urethral fistula and 75 % of those with cloacal anomalies.

We think therefore it is absolutely important to start with an international comparable study involving the diagnosis, treatment and results of anorectal malformations like we have done it years before in patients with Hirsch sprung's disease (Holschneider 1982).

Kaynaklar

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