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Primary Neonatal Anorectoplasty without Colostomy for High Anorectal Malformations including Pouch Colons

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Abstract

As a tribute to Col. Sangham Lal, an outstanding Surgeon of international and national repute, we chose to evaluate "Primary Neonatal Anorectoplasty without Colostomy for High Anorectal Malformations including Pouch Colons" as single stage procedure with special reference to modified technique of Posterior Sagital Anorectoplasty (PSARP) developed and promoted by the author at the Department of Pediatric Surgery, Institute of Medical Sciences, Banaras Hindu University since 1996 (1,2), as against the gold standard protocol of three stage management. Out of a total of 1036 newborns admitted with ARM since January 1996 till July 2007, 907 (87.5%) were high ARM including 87 Pouch Colons and 129 (12.5%) low ARMs. Only 24 babies had colostomy. The remaining 883 had primary single stage operation: SCG Modified PSARP – 466; Abdomino Perineal Pull through (APP) – 263; PSARP combined with APP – 23 Anterior Sagital Anorectoplasty (ASRP) for intermediate anomalies – 131. The results were analyzed and compared with previously performed 458 three staged procedures for mortality, morbidity, continence and cost.

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The neonatal single stage procedure mortality was (4.5%) compared to 13.5% colostomy mortality in staged procedure. Good continence (80%) was achieved in Neonatal single stage group compared to (45%) in staged group. The mortality rate was particularly low among the babies who underwent single stage modified PSARP (3.1%) as compared to APP (10.2%). Based on our large experience we strongly recommend primary modified PSARP or single stage APP for all high anorectal malformations. Colostomy must be avoided to achieve better continence due to physiological reasons.

Keywords: primary PSARP, single stage anorectoplasty, colostomy, high ARM in newborns

Introduction

Anorectal malformations (ARM) are the most common surgical anomalies encountered in the newborns in our country (3) particularly so in our hospital catering to relatively poor belt of eastern UP, Bihar, Jharkhand & Chattisgarh. The anomaly is easily identified and for surgical management is classified into high, intermediate or low type depending upon the extent of anorectal agenesis. The high ARM (including Intermediate & Pouch Colon) are more frequent (85%) than low type (15%). For high ARMs over last 150 years, the gold standard protocol of management has been: I- preliminary neonatal colostomy, II- anorectoplasty (abdomino perineal –APP / posterior sagital - PSARP / anterior sagital - ASARP), and III – Colostomy closure. Our experience with staged procedures has been very dissatisfying: high colostomy mortality and colostomy morbidity, poor colostomy care, diarrhea, colostomy prolapse, chronic anemia, repeated UTI, coupled with problems of travelling, repeated hospitalization, high risk of anesthesia and high cost of surgery. Our study further revealed that only 40% of babies of High ARM could complete the three staged procedures. And at the end, the result of achieving good continence (good Kelly's score) was seen only in 45% cases, 3 years after colostomy closure. Clearly, staged approach was far from satisfactory. Hence at our Institution the author modified the technique of Pena's PSARP (4) and promoted it for primary PSARP without colostomy for management of high ARM, in which the anorectal pouch was less than 3 cm. above the perineum. In

other (> 3 cm.) cases single stage APP was done.

Material and Methods

Losing large number of babies of staged procedure in ARM while waiting for definitive pull through, forced us to innovate in favour of single stage neonatal anorectoplasty. The author modified in 1996 Pena's PSARP, the crux being: (a) recto-vesical fistula, carefully dissected extra luminally and extramurally without opening the AR pouch (b) the AR pouch is not tapered (c) the AR pouch after mobilization first secured at the new anal site to superficial muscle complex and with few stitches to skin (d) the pouch is opened only when whole wound is stitched. The mecorium is sucked actively – to prevent spillage and wound infection.

Our initial experience of the procedure was very encouraging. Its results were presented at the Annual meeting of India Association of Pediatric Surgeons, Bombay, 1997. We have been following ever since single stage operations in ARM, using our modified technique of PSARP in most of high ARMs. Since January 1996 to July 2007, 1036 newborns with ARMs were admitted out of which 907 were diagnosed to have high anomalies (including 87 Pouch Colons). Only 129 were of low type. These 907 babies formed the subject material of single stage anorectoplasty, 661 being males (72.8%) and 246 (27.2%) females.

Observations

Out of 907 high ARM babies 24, (2.6%) were found too sick for pull through operations, hence had colostomy. Modified Primary PSARP was done in 466 cases, abdominoperineal pull through APP was done in 263 cases and in 23 cases PSARP was combined with APP. ASARP was done for intermediate lesions in 131 newborns.

Mortality

Out of 883 cases of single stage anorectoplasty 40 babies died (4.5%) during post-op period whereas in the staged group of 763 high ARMs, 103 (13.5%) patients died prior to getting second stage operation. Also it was revealed that the mortality of primary modified PSARP was only 3.1% and that of primary APP was 10.2%, thereby proving that primary modified PSARP is safer. All the three stages of operation could be completed only in 458 out of 763 ARMs cases admitted from January 1989 to January 1996. Thus nearly 40% of patients (39.9%) either succumbed to disease and its complication or reconciled with the pathology.

Morbidity

Table 1 shows the rate of various complications encountered between staged and primary single staged procedures. The incidence of all complications was observed to be far lower in single stage procedures as compared to staged. The blood requirement during surgery was very low in single stage procedures.

Continence

As assessed by Kelly's clinical method (5), continence was remarkably better in single stage group where 80% achieved good score as compared to 45% in staged procedure.

The misery of patients and cost of treatment was very high in staged procedures.

Table 1

Complications of anorectoplasty; Primary vs Staged procedures.
Period 1989 to July 2007

Complications	Staged 458 (%)	Primary 883 (%)
Significant bleeding	(26.42)	(9.39)
Bladder base injury	(1.96)	(0.82)
Prostatic uretheral injury	(3.71)	(1.63)
Faecal leak	—	(0.41)
Anal stenosis	(4.14)	(2.45)
Mucosal prolapse	(4.58)	(0.82)
Wound infection	(19.87)	(1.43)
Ureter injury	—	(0.20)
Neurogenic bladder	(1.75)	(0.20)
Chronic anaemia	(35.59)	—

Discussion

Primary anorectoplasty for ARMs was performed as early as 1948 by Rhoads and Randall (6), and by Noris and Brayton (7) in 1949, but were given up because of high mortality and infection. Aluwihare (8), Goon (9), Moore (10), Craig (11) and Narasimhan *et al* (12) tried to revive single stage anorectoplasty. However the results

showed high incidence of wound infection. Hence the single stage operation did not become very popular. We feel that extra luminal extra mural ligation/transaction of recto-uretheral/ recto-vesical, fistula and not opening the rectal pouch till whole wound is closed minimizes the risk of infection and wound dehiscence and also decreases morbidity and mortality. The achievement of better continence in our studies supports the theory of Dobbing *et al* (13) and of Wiesel and Hubel (14) which states that there is activity driven race for space allotment in the cerebral cortex immediately after birth for normal somato-sensory brain neocortical neuro-circuitory development in the first 7 days after birth. Placing the anorectum in perineum in first week of birth thus helps in achieving better continence. We feel that tapering the anorectum as advised by Pena may also compromise with anorectal function. Therefore our technique of modified PSARP seems to work better.

Conclusion

Colostomy in the management anorectal malformations should be avoided. Modified single stage PSARP is the operation of choice for majority of high and intermediate ARMs. When the agenesis of anorectum is more than 3 cm or there is pouch colon or common cloaca abdomino perinial, single stage operation should be done. *Primary neonatal anorectoplasty achieves far better results.*

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