Journal of Pediatric Surgery 52 (2017) 554–557

Contents lists available at ScienceDirect

Journal of Pediatric Surgery

journal homepage: www.elsevier.com/locate/jpedsurg

Managing fecal incontinence in patients with myelomeningocele in Sub-Saharan Africa: Role of antegrade continence enema (ACE)

Musa Ibrahim [a,*], Nasiru Jinjiri Ismail [b], Mohammad Aminu Mohammad [b], Hassan Ismail [b], Misbahu Haruna Ahmed [c], Owolabi Lukman Femi [d], Mohammed Abba Suwaid [e]

[a] Children Surgery Unit, Department of Surgery, Murtala Muhammad Specialist Hospital, Kano, Nigeria
[b] Department of Neurosurgery, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria,
[c] Department of Surgery, Aminu Kano Teaching Hospital, Kano State, Nigeria,
[d] Department of Medicine, Aminu Kano Teaching Hospital, Kano, Nigeria
[e] Department of Radiology, Aminu Kano Teaching Hospital, Kano, Nigeria

ARTICLE INFO

Article history:
Received 10 March 2016
Received in revised form 5 August 2016
Accepted 22 August 2016

Key words:
Neural tube defects
Myelomeningocele
Fecal incontinence
Antegrade continence enema (ACE)

ABSTRACT

Background: Neural tube defects (NTDs) are among the major causes of sphincter dysfunctions. Fecal incontinence (FI) because of myelomeningocele (MMC) leads to problems with social acceptability and decreased quality of life (QOL), life satisfaction in addition to other morbidities. This is a report of experience with antegrade continence enema (ACE) in the management of FI in patients with MMC in an African set-up.

Materials and method: A retrospective review of 23 children and young adults with FI because of MMC managed with ACE from October 2008 to September 2015 from African Specialist Hospital. The clinical outcomes have been analyzed.

Results: From October 2008 to September 2015, a total of thirty-two n = 32 patients underwent ACE procedure after repair of MMC associated with FI. Available data of 23 (71.87%) patients were reviewed retrospectively. Mean age at which ACE was created was 6.43 ± 3.83 years, range (3.5–17.8) years, median 5 years. Follow-up after ACE creation was (0.5–6.9) years, median 2.6 years. There were full continence in 13 (56.52%), partial continence in 8 (34.78%) and failure in 2 (8.69%). There were 16 (69.56%) complications and 4 (17.39%) minor post ACE surgery revisions. Mean PedQOL(™) score before ACE and then 5, 10, and 15 months after ACE were 47.86 ± 13.83, range (20.4–66.0) vs 88.34 ± 7.11, range (77.9–98.6); $p = 0.000$, 88.9 ± 6.44 range (76.9–98.5); $p = 0.000$, 89.01 ± 6.50, range (76.9–98.88) $p = 0.000$ respectively. Mean parental/caregiver satisfaction score for 15 (65.21%) patients aged 6 years and below using modified visual analogue scale (VAS) 1 to 10 before ACE and after were 3.06 ± 0.79, range (2–4), median 3 vs 8.0 ± 1.30, range (5–10), median 8; ($p = 0.000$) while 8 (34.78%) patients aged above 6 years were able to assess their satisfactions score before and after ACE creation with mean of 1.75 ± 0.70, range (1–3), median 2 vs 7.75 ± 1.03, range (6–9) median 8; ($p = 0.000$).

Conclusion: ACE has satisfactory outcomes in an African set-up in patients with MMC associated with FI. Multidisciplinary approach to neurogenic FI should be encouraged in such set-ups.

Neural tube defects (NTDs) are among the devastating congenital malformations in resource-limited countries, Nigeria inclusive [1–3].

Myelomeningocele (MMC) with sphincter dysfunctions is a chronic surgically correctable lesion compatible with life. When the associated morbidities of MMC are neglected, it has negative stigmatization that leads to psychological, social challenges and isolation, low self-esteem, as well as destitution.

Fecal incontinence (FI) is much more of a challenge in MMC, with at least half of children with NTDs being affected [4,5].

Reports of associated morbidities and its misery on children, parents and their caregivers with major NTDs with incontinences are documented in Sub-Saharan Africa with calls for multidisciplinary approaches [6–8].

There are several surgical procedures described to treat patients with neurogenic FI. In 1990 Malone et al. described the use of the appendix as a conduit for antegrade continent enemas (MACEs) [9] while others modified the procedure with satisfactory outcomes [10,11]. However, notwithstanding the prevalence of MMC in Sub-Saharan Africa, low- and middle-income countries with associated morbidities, from our literature search, there has been no report on the management of children with NTDs associated with FI from such regions.

Though ACE procedures have been associated with some complications, it has improved management of FI and increased patients' satisfactions [12,13].

* Corresponding author at: Department of Surgery, Murtala Muhammad Specialist Hospital, Kano, Nigeria. Tel.: +234 8073398419.
E-mail address: zarenawa1@yahoo.com (M. Ibrahim).

http://dx.doi.org/10.1016/j.jpedsurg.2016.08.014
0022-3468/

Therefore, we examined and reporting the outcomes of patients using ACE to manage continence after MMC surgeries in Sub-Saharan African Specialist Hospital.

1. Materials and method

This was a single unit, single-center retrospective analysis of twenty three n = 23 children with myelomeningocele (MMC) repair associated with FI at the department of surgery, children surgical unit of Murtala Muhammad Specialist Hospital Kano, in northern Nigeria from the year 2008 to 2015.

Inclusion criteria were patients with MMC and neurogenic sphincter dysfunction leading to chronic unexpected stool and gas leakage from the rectum as a result of inability to voluntarily control sphincter apparatus of the anus with adequate records. Patients who responded to conservative managements, dietary modifications, oral medications, physical therapy [14,15] and also other causes of FI were excluded from this study.

All the surgical procedure for ACE creation was done via sub-umbilical mini-laparotomy for appendicocecostomy with caecalplication, ileocecostomy and split appendix when urological reconstruction was required.

Prior to discharge from the hospital; parents, family/caregivers and patients were shown how to perform ACE using 10 to 60 ml syringe on size 8, 10 or 12 feeding tube lubricated with K-Y® Jelly (Fig. 1) and then they are closely followed-up after discharge.

ACE was effective using normal saline or clean boiled water used after cooling. Parents were given options of either normal saline or clean boiled water allowed to cool overnight while at home. Indwelling feeding tubes were left in-situ after the created ACE stoma for 2–3 weeks.

Using the Malone continence scale [16] viz – full, partial, or failure (full: totally clean or minor rectal leakage on night of washout; partial: clean but significant stoma or rectal leakage, occasional major leak and/or still wearing protection but perceived by child or parent to be an improvement; failure: regular soiling, no perceived improvement, procedure was abandoned). Success was defined by combining the full and partial success rates [17].

Data collected included patients' demographics, impact of FI on the child and their family/caregivers before and after ACE using PedQOL(™) General Core Scale QOL 4.0. The survey is comprised of 23 questions encompassing physical, emotional, social and school functioning and the questions are scored using a 5-point Likert scale (0 = never a problem, 4 = almost always a problem). The questions were then reverse scored and linearly transformed as per questionnaire protocol (0 = 100, 1 = 75, 2 = 50, 3 = 25, 4 = 0) with the highest possible score being 100, indicating perfect quality of life, and the lowest score being 0 indicating severe QOL dysfunction [18–21]. Also parental/patients satisfaction scores using modified visual analogue scale (VAS) [22] before and after ACE, conduits used for ACE creation, complications and continence were analyzed using StatPlus, AnalystSoft Inc. for Mac OS(R) version 6. Multivariate analysis was carried out and $P < 0.05$ was considered as statistically significant.

2. Results

From October 2008 to September 2015, a total of thirty-two n = 32 ACE procedure was done in our unit after repair of MMC associated with FI. Available data of 23 (71.87%) patients were retrospectively reviewed. There were fourteen (n = 14) male and nine (n = 9) female with M:F ratio 1.55:1. There were 3 (13.04%) MMC lesion of the lumbar region, 15 (65.21%) lumbosacral and 5 (21.73%) sacral regions. Mean age at which MMC surgery was carried out was 4.02 ± 4.62, range (0.3–16) years, median 2 years. Mean time taken after MMC repair to ACE creation was 2.41 ± 1.36 years, range (0–4.9) years, median 2.6 years. Mean age at which ACE was created was 6.43 ± 3.83 years, range (3.5–17.8) years, median 5 years. Three n = 3 (13.04%) patients aged 9, 7.2 and 10.4 years respectively had simultaneous MMC repair and ACE creation.

A 7-year-old male child with FI due to sacral MMC being trained on ACE 2 weeks after ACE creation in an African set-up

MMC (Myelomeningocele)
ACE (Antegrade Continence Enema)
FI (Faecal Incontinence)

Fig. 1. A 7-year-old male child with FI because of sacral MMC being trained on ACE 2 weeks after ACE creation at Murtala Muhammad Specialist Hospital, Kano, Nigeria. MMC (myelomeningocele) ACE (antegrade continence enema) FI (fecal incontinence).