Original Article

Congenital Clubhand: A Clinical Study in Cote D'Ivoire

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Abstract

Background: Congenital clubhand has severe functional and aesthetic impact and requires complex cares.

Patients & Methods: From 1990-2004, a retrospective study of 29 congenital clubhands (20 patients) was performed at Yopougon teaching hospital and Don Orione Center, Bonoua, Côte d'ivoire. Data obtained from their hospital records were reviewed. Radial and ulnar clubhands were classified according to Bayne & Klug and modified Swanson, respectively and patients were assessed with the score of Cattaneo et al.

Results: There were 13 males and 7 females, aged 4 days-20 years (mean, 5.9 ± 6.6 years). We found 25 radial defects in 16 patients and 4 unilateral ulnar defects. Fifteen radial clubhands were treated by osteotomy and centralization, 2 by centralization alone and 8 by soft tissue release alone. Ulnar clubhands needed osteotomy. At 2 years of follow-up, functional results were good (75%) and fair (25%), while aesthetic results were good (60%) and fair (40%). Conclusion: This treatment provided satisfied results and increased early children referral to our specialist centers.

Key-words: Congenital clubhand, child.

Introduction

Congenital clubhand is a rare malformation, which presents various clinical patterns based on degree of bone deficiency[1-5]. Their treatment is specialised requiring staged procedures[2,6-12]. This is a report of the experience with this condition in Côte d'ivoire.

Patients and methods

In the period from November 1990 to June 2004, 29 congenital clubhands were managed in 20 patients at the pediatric surgery unit of Yopougon teaching hospital and Don Orione Center for diseables, Bonoua (Côte d'ivoire). The hospital records of the 20 patients have been retrospectively reviewed. Bayne & Klug[3] classification was used for radial clubhands and modified Swanson's[4] criteria for ulnar clubhands. The functional and aesthetic results were evaluated based on the Cattaneo et al.'s grading score[5].

Results

There were 13 males and 7 females (ratio 2:1) with a mean age of 5.9 ± 6.6 years (range, 4days-20 years). Summaries of clinical data are shown in table 1 and table 2. The study showed a frequency of 1 club hand per 464 339 total births. Among radial defects, we found 9 bilateral locations (fig.1). Associated lesions were present in half of patients with a high rate of clubfoot (56%). Average surgical time was 6.5 ± 6.3 years (range, 1-20 years). Procedures performed are shown in table 3. The corrected position was maintained by splintage combined with manipulations. Patients were followed for 2 years, during which time

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Table 1:
Classification of congenital clubhands according to Bayne and Klug[1] and modified Swanson classification.[2]

Type	I	II	III	IV	Total	(%)
Radial	8	2	-	15	25	86
Ulnar	3	1	-	-	4	14

Table 2:
Clinical Presentations of congenital radial clubhands

Aspect	Normal	Floating	Short & Deviated
Thumb	22(88%)	3(12%)	-
Others	25	-	-
Forearm	10	-	15(60%)

Table 3:
Treatment option for radial and ulnar clubhands

Treatment	Type I	Type II	Type III	Total
Centralization	-	2	-	2
Centralization/ Osteotomy	-	-	15	15
Osteotomy	3	1	-	4
Soft Tissue Release	8	-	-	8
Total	**11**	**3**	**15**	**29**

Table 4:
Functional and aesthetic results after surgery

Outcome	Good	Fair	Poor
Functional	15(75%)	5(25%)	-
Aesthetic	12(60%)	8(40%	-

examination, x-rays and photographs were taken. Two of the 20 patients incurred haematoma and 1 wound infection. Repeat surgery was performed and the wounds healed secondarily. In 3, pin migration occurred requiring their removal. One patient needed z-plasties to relieve constrictive scars. Two years follow-up showed solid union and full remodeling in all patients. No recurrence of deformity had occurred. The functional outcome was good in 15 (75%) and fair in 5 (25%) patients, and aesthetic results were good (fig.2) and fair in 12 (60%) and 8 (40%) patients respectively (Table 4).

Discussion

With a frequency of 1 club per 464339 births,



Fig. 1: Bayne type IV bilateral radial clubhand in a young girl



Fig. 2: Clinical outcome in the same patient after surgery

congenital clubhand remains as rare in Cote d'Ivoire as reported in Europe and America[1,2]. Several morphological aspects has been noted like a high rate of radial defect (86%) in which bilateral occurence (60%) and Bayne type IV (56%) were predominant[3]. We also observed a preponderance of

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male (65%) and right-sided location (64%). Comparing these data with those reported by others, we observed significant variation wich advocates the scheme of an embryological accident although the origin of this malformation remains unknown[1,2,9,11].

Regarding treatment, manipulations and serial plasters applications was used in 10 patients aged less than 2 years. The effectiveness of such therapy at this age is widely recognised[5,9]. Consequently, we did not use physiotherapy in the older children who underwent surgery without preoperative care. Socio-cultural considerations and economic constraints could explain late referral to hospital. The optimal time of surgery is during the first 2 years because of excellent adaptation of carpal bones at this age[7,8,12]. For reasons already mentioned, such surgical timing could not be planned in our conditions. Until nowadays, centralization remains the most operative technique performed[2,7,9-12]. In 15 patients with severely deviated forearm, an osteotomy of ulna improves the cosmetic appearance. Due to limited resources, others staged surgical procedures including thumb reconstruction and lengthening were not carried out[6,7,13-15]. Despite these current factors, 75% of patients had satisfactory function and 60% of families were pleased with the aesthetic result. We observed no recurrence of wrist flexed deformity as noted by others, probably because of shortly follow-up[2,7,13-15].

However, there is no doubt that pollicization may improve the function of patients with floating thumbs[2,7-12]. By the same token, lengthening procedures may well provide a best cosmetic appearance in patients with shortening forearms[6,13,15]. Lastly, the follow-up was however short in this report and definite conclusions can not be made.

References

1. Lamb DW, Wynne-Davies R, Solo L. An estimate of the population frequency of congenital malformations of the upper limb. Journal of Hand Surgery, 1982;7:557-562.
2. Romana MC. La main bote radiale. In “Les anomalies congénitales du membre supérieur”, GEOP, Montpellier, Edition Sauramps Médical, 1998 :123-133.
3. Bayne LG, Klug MS. Long term review of the surgical treatment of radial deficiencies. Journal of Hand Surgery, 1987;12:169-179.
4. Swanson AB, Tada K, Yonenobu K. Ulnar ray deficiency: its various manifestations. Journal of Hand Surgery, 1984;9:658-664.
5. Swanson AB. A classification for congenital limb malformtations. Journal of Hand Surgery, 1984;9:658-664.
6. Cattaneo R, Catagni MA, Guerreschi F. Traitement de l'agénésie radiale par la méthode d'Ilizarov. Rev Chir Ortho et Réparatrice de l'App moteur, 2001; 87: 443-450.
7. Buck-Gramcko D. La main bote radiale. Paris, Expansion Scientifique Française. 1991: 23-30.
8. De Courtivron B, Bonnard C, Glorion B. Les malformations congénitales du membre supérieur. Calendrier de prise en charge. Revue de Médecine de Tours.1995;29:9-10.
9. Guero S. Main bote radiale. Enseignement de chirurgie de la main, 1999; 11:97-110.
10. Flatt AE. The care of congenital hand anomalies. 2nd Edition. St. Louis, USA: Quality Medical Publishing, 1994.
11. Urban MA, Osterman AL. Management of radial dysplasia. Hand Clin., 1990: 589-605.
12. Stewart Watson. The principles of management of congenital anomalies of the upper limb. Arch Dis Child 2000;83:10-17.
13. Sabharwal S, Finuoli AL, Ghobadi F. Pre-centralization soft tissue distraction for Bayne type IV congenital radial deficiency in children. J Peditr Orthop 2005; 25(3):377-81.
14. Buck-Gramcko. Radialization as a new treatment for radial clubhand. J Hand Surgery [Am]. 1985;10: 964-968.
15. Romana MC, Gilbert A. Les allongements de l'avant-bras dans les séquelles de main bote radiale. Paris, Expansion Scientifique Française, 1991, pp 31.

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