THE EFFECT OF EARLY PERIPHERALLY INSERTED CENTRAL CATHETER REMOVAL ON THE GROWTH OF VERY LOW BIRTH WEIGHT INFANTS IN THE FIRST TWO YEARS OF LIFE

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Background

- The POPS (PICC OUT PARENTERAL NUTRITION STOP) trial is a multicentre randomised control trial, evaluating nutritional outcome after early discontinuation of parenteral nutrition.
- The primary outcome showed PICC removal at 100mls/kg/day enteral feeds compared to removal at 140mls/kg/day resulted in a statistically significant delay of 1.5 days to regain birthweight.
- The clinical significance of this difference is uncertain.

Aim

This study assessed growth of participants in the POPS trial up to two years corrected gestational age (CGA).

Methods

- This was a retrospective case-control study.
- Participants of the POPS trial in Coombe Women and Infants University Hospital were eligible for inclusion.
- Growth parameters inclusive of weight, occipital frontal circumference (OFC) and length were recorded from out-patient appointment data.
- Primary outcomes were World Health Organisation (WHO) and Fenton Z-scores at five predefined time points – birth (WHO Z-Score), 0-11 weeks CGA, 12-35 weeks CGA, 36-60 weeks CGA and 61-96 weeks CGA (all Fenton Z-scores) compared between control and intervention groups.

Results

- There was no clinically relevant difference in Mean Z-scores at birth for all growth parameters.
- Regarding weight, a trend towards lower mean Z-scores in the intervention group between 0 and 11 weeks CGA, especially in the extremely low birth weight infants (ELBW) (Figure 1 and 2) was observed. However this did not reach statistical significance (Table 1).
- Regarding length, the same trend, delayed up to 35 weeks CGA, was observed for length, reaching statistical significance for ELBW infants between 12 and 35 weeks CGA (Table 2).
- There was no difference in OFC mean Z-scores at any time-point.

Table 1 - Comparison of the mean Z-scores for weight at four predefined time points

	Control Mean (SD) (n)	Intervention Mean (SD) (n)	P
Birth			
Z-score weight	-0.44 (0.9) (55)	-0.45 (1.2) (55)	0.63*
Z-score weight ELBW	-0.64 (1.0) (23)	-0.70 (0.9) (19)	0.84
0 – 11 weeks CGA			
Z-score weight	-0.64 (1.0) (36)	-0.96 (1.1) (40)	0.19
Z-score weight ELBW	-0.75 (0.7) (13)	-1.45 (1.3) (13)	0.06*
12 – 35 weeks CGA			
Z-score weight	-0.77 (1.4) (40)	-0.93 (1.4) (47)	0.58
Z-score weight ELBW	-0.73 (1.3) (18)	-1.26 (1.2) (15)	0.25
36 – 60 weeks CGA			
Z-score weight	-0.27 (1.1) (32)	-0.42 (1.4) (40)	0.63
Z-score weight ELBW	-0.17 (1.4) (15)	-0.23 (1.5) (15)	0.91

* Mann-Whitney U test; ELBW, Extremely Low Birth Weight

Table 2 – Comparison of the mean Z-scores for length at four predefined time points

	Control Mean (SD) (n)	Intervention Mean (SD) (n)	P
Birth			
Z-scores Length	-0.54 (1.6) (43)	-0.78 (1.1) (46)	0.49*
Z-scores Length ELBW	-1.01 (1.3) (16)	-1.29 (0.9) (16)	0.49
0 – 11 weeks CGA			
Z-scores Length	-0.75 (1.0) (33)	-0.81 (1.4) (39)	0.81*
Z-scores Length ELBW	-1.11 (0.9) (12)	-1.47 (1.3) (12)	0.45
12 – 35 weeks CGA			
Z-scores Length	-0.44 (1.7) (37)	-0.79 (1.4) (40)	0.32
Z-scores Length ELBW	-0.53 (1.4) (17)	-1.35 (0.7) (13)	0.04
36 – 60 weeks CGA			
Z-scores Length	-0.44 (1.6) (29)	-0.29 (1.5) (39)	0.69
Z-scores Length ELBW	-0.22 (2.1) (13)	-0.63 (1.9) (15)	0.60

* Mann-Whitney U test; ELBW, Extremely Low Birth Weight

Figure 1 – Mean Weight Z-scores

Figure 2 – Mean Weight Z-scores in Extremely Low Birth Weight Infants

Discussion

A statistically significant difference in mean Z-scores for length in ELBW infants at 12–35 weeks of gestation and a trend of lower mean Z-scores for weight in early infancy period were observed. These differences disappeared at or after 36 weeks CGA, causing no impact on growth up to 2 years CGA. The statistical difference seen is unlikely to cause a clinically relevant difference in growth. Earlier PICC line removal decreases the risk of infants developing late onset neonatal sepsis (1).

Conclusion

The results of this study show no clinical difference in the growth of VLBW infants up to two years CGA after early discontinuation of parenteral nutrition.