The effect of preoperative calcitriol prophylaxis on post-thyroidectomy hypocalcaemia in children

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INTRODUCTION

Hypoparathyroidism induced hypocalcaemia is the most well-known complication of total thyroidectomy. In 2013 we implemented prophylactic pre-thyroidectomy calcitriol supplementation for all children undergoing total thyroidectomy at Amsterdam UMC.

AIM

To evaluate the efficacy of a local prophylactic calcitriol treatment protocol in preventing post-thyroidectomy hypocalcaemia in children.

Protocol:
Starting 3 days pre-surgery:
0.5 ug calcitriol twice a day
Day 6-10 post-surgery:
0.5 ug calcitriol once a day
Day 11-15 post-surgery:
0.5 ug calcitriol on alternate days

METHOD

Retrospective case study comparing

- Patients with calcitriol prophylaxis (cohort 2013-2020; n=26)
- Patients without prophylaxis (cohort 2000-2012; n=25)

Primary outcome:

- Hypocalcaemia < 72 hrs after surgery

Secondary outcomes:

- Symptomatic hypocalcaemia
- Need for treatment
- Length of hospitalization

RESULTS

Baseline and surgery characteristics

	Calcitriol group (n = 26)	Controls (n = 25)	p-value
Median age at surgery in years	14 (3-17)	13 (1-17)	0.828
Gender female	26	13	< 0.05
Median length of follow-up in years	2 (0-6)	4 (0-18)	< 0.05
Indication for surgery			0.276
Prophylactic	2	6	
Benign disease	13	9	
Malignant disease	11	10	
Extent of surgery			0.564
No lymph node dissection	18	18	
Central lymph node dissection	4	3	
Central+lateral lymph node dissection	4	2	
Node picking	0	2	
Parathyroid status			
Parathyroid gland in pathology report	11	11	0.903
Parathyroid autotransplant	7	4	0.499
Median PGRIS* score	3 (0-4)	4 (2-4)	0.271

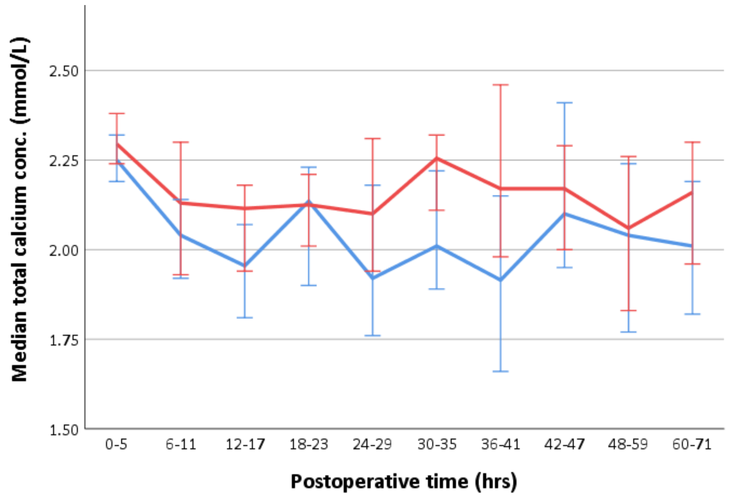
*parathyroid glands remaining in situ

Hypocalcaemia outcome < 72 hours post-surgery

	Calcitriol group (n = 26)	Controls (n = 25)	p-value
Hypocalcaemia (Ca < 2.0 mmol/l)	17	18	0.764
Severe hypocalcaemia (Ca < 1.8 mmol/l)	10	13	0.331
Symptomatic hypocalcaemia	6/17	5/18	1.000
Treatment necessary	15/17	16/18	1.000
Intravenous calcium supplementation	10/17	14/18	0.697
Rapidly resolved hypocalcaemia	4	4	1.000
Transient hypocalcaemia	8	5	0.305
Permanent hypocalcaemia	5	9	0.305
Length of hospitalization in days	3 (2-8)	3 (2-10)	0.356

Median total calcium concentrations (mmol/l) in the first 72 hours after thyroidectomy in 26 calcitriol treated patients (red) and 25 patients without prophylaxis (blue)

Bars display 95% confidence intervals.



CONCLUSION

Calcitriol prophylaxis resulted in higher postoperative calcium concentrations but did not reduce the occurrence of (symptomatic) hypocalcaemia and length of postoperative hospitalization.

CONTACT INFORMATION

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