

# RECOVERY OF HYPOTHALAMIC PITUITARY FUNCTION AFTER STALK TRANSECTION AND PANHYPOPITUITARISM IN AN ADOLESCENT

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**A 12 year old boy sustained a severe head injury by a passing car whilst crossing the road**

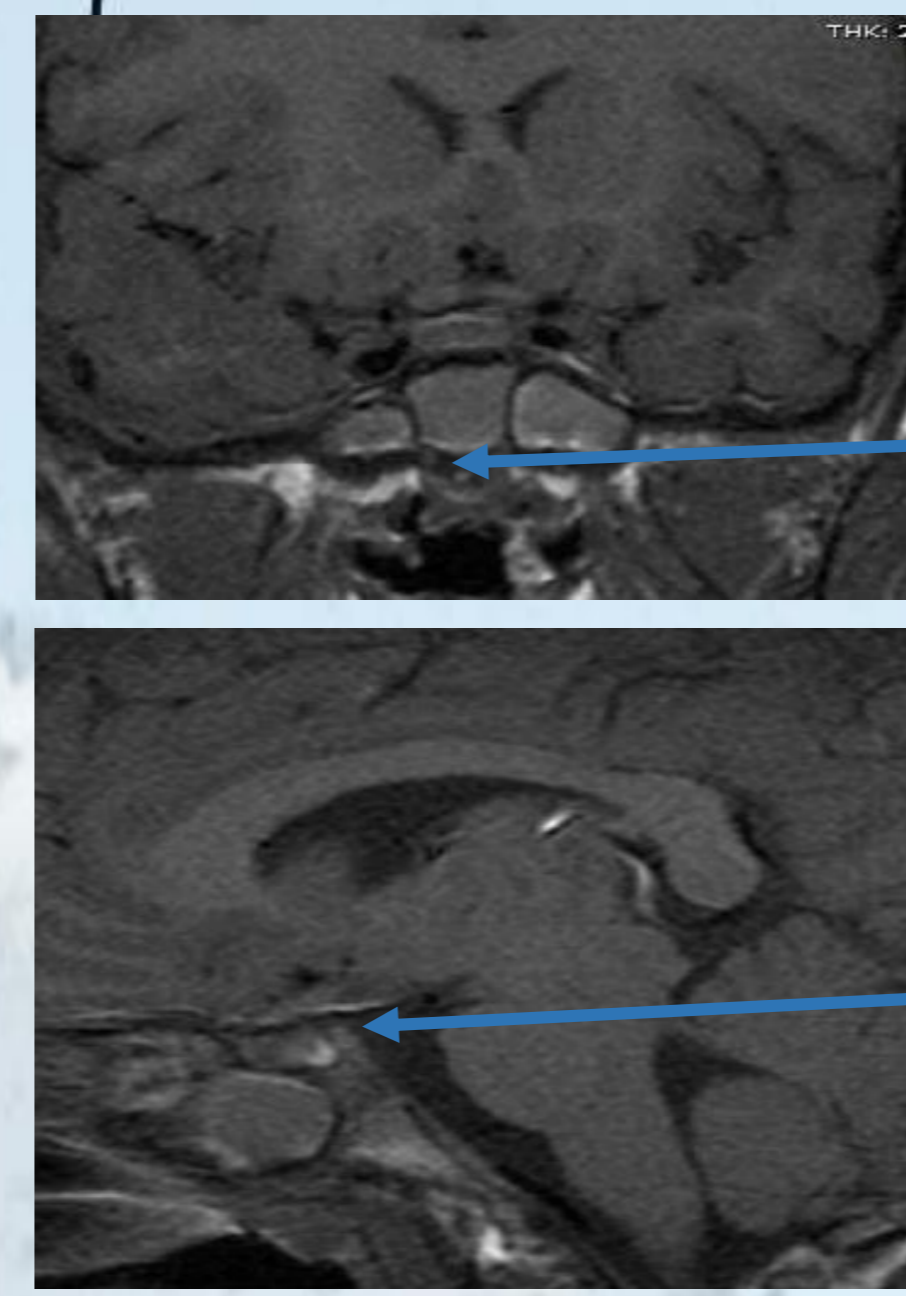
- Massive basal skull fracture
- Acute onset diabetes insipidus
- Extradural and subdural bleeding requiring surgical decompression.

Pre-operative physical examination:

healthy boy

height 60<sup>th</sup> centile for age, Tanner stage III puberty, 10 ml testes bilaterally.

MR head: apparent pituitary stalk transection right optic nerve transection, confirmed during surgical exploration



**2 days post op**

Cortisol <28 nmol/l

T4 5pmol/l, TSH<0.021mu/l

Testosterone < 0.3nmol/l FSH<0.3u/l. LH <0.1u/l

IGF1<3nmol/l

Hydrocortisone, thyroxine and DDAVP commenced

**Over next 12 months from age 12-14 years**

linear growth failure and pubertal arrest

Glucagon stimulation test: Max GH

GH deficiency: rGH commenced

Bone age was advanced (14 years at 12), consistent with

pubertal status at admission,

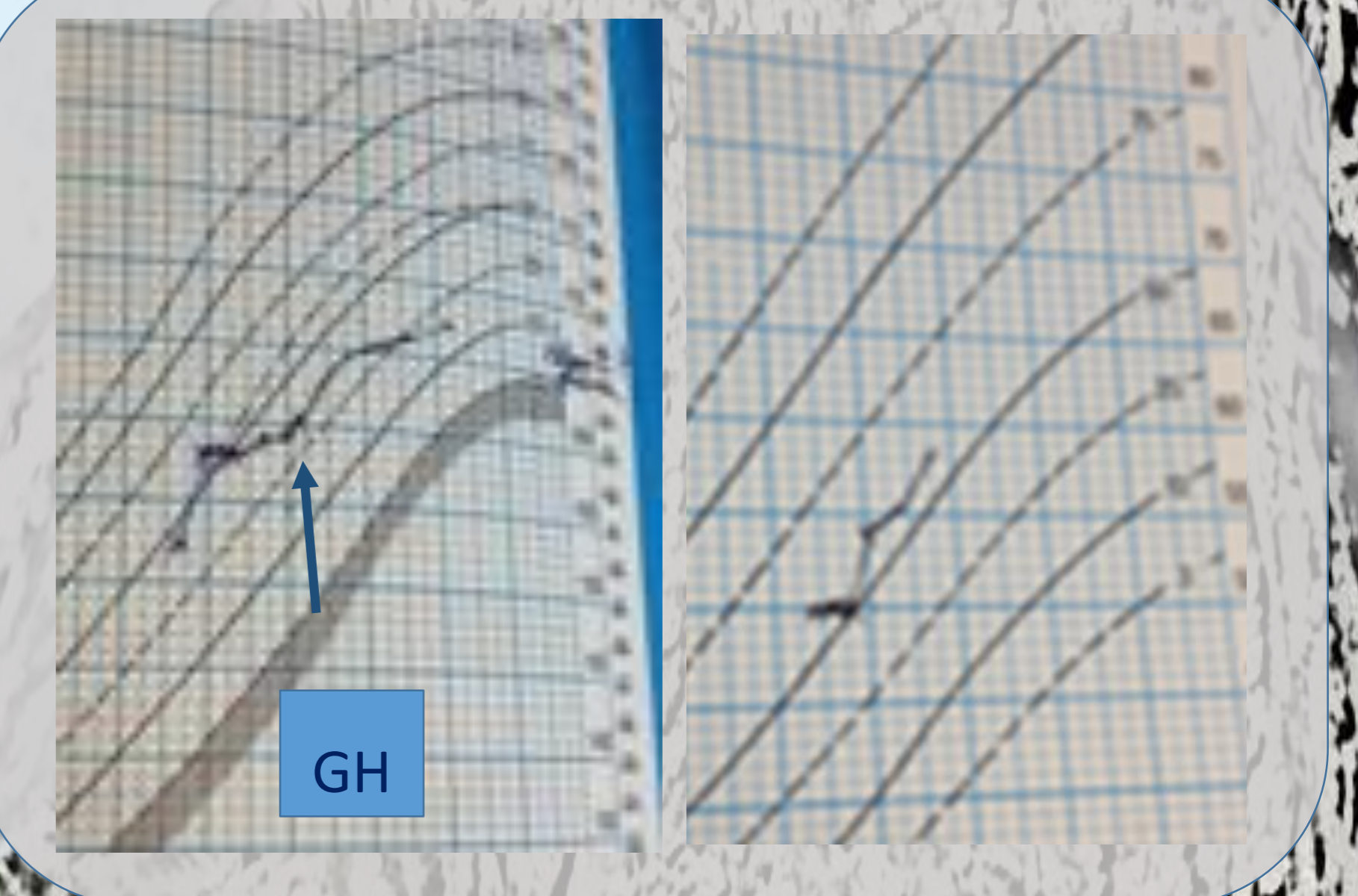
Testosterone replacement was delayed to age 14:

Testosterone undecanoate 40-120mg/day

Then testosterone esters IMI

Final height 165cm

GH ceased at end of linear growth



date	ft4 pmol/10-24l	TSH mU/0.5-4l	Cortisol nmol/l200-750	FSH IU.5-6/l	LH u/l0.5-5	Testost nmol/lNR 10-30	Prl mu/l<450	IGF 1 nmol/l25-95	Comments
day 1	23.4	1.04	67						
Day7	11.1	<0.01	On dex	0.1	1.5				
Day17	9.6	0.02	<28	<0.1	<0.3	<0.7			T4, hyzone, GH at 12 m + T.
After 5 years	17	0.62							T4 reduced, ceased after 12 months
7 years later	12.6	1.66				18			Off T4 then hyzone reduced, ceased
9years Later	13.7	1.79	333					11.6	
10 years later	10	2.19	166			22.1		13	
11 years later	12.4	1.68	299			23.9	118	13	Tired IIT GH<5 Gh started at 12 years post injury

**Subsequent progress**

- **Over next 7 years, to age 21: treated with thyroxine, hydrocortisone, testosterone, vasopressin.**
- At 21 he stopped taking thyroxine. Thyroid hormone levels remained normal (ft4 pmol/l, TSH mu/l)
- Attempted reduction in hydrocortisone → severe tiredness (cortisol <50nmol/l at 8am)
- Testosterone supplementation ceased at age 23 Testosterone remained normal at 22 nmol/l (10-24)
- Hydrocortisone gradually withdrawn between ages 23-25, cortisol remain 200-252 nmol/l

**At age 25**

Due to excessive lethargy,

formal GH testing with ITT max GH 5mu/l

cortisol 200-250nmol/l

but no stress response to hypoglycaemia

**Rx GH 2.5 mg/m<sup>2</sup>/week, with restoration of good health. Diabetes insipidus is persistent and advice given for steroid cover for stress**

**Conclusion**

**Late recovery of hypothalamic pituitary axes is possible after pituitary stalk transection**

