

# Spontaneous Re-ossification of a Large Calvarial Defect in an Older Child

## Çocuk Hastada Geniş Kalvarial Defektin Spontan Reossifikasyonu

### LETTER to EDITOR

The dura mater and the periosteum is considered to be a regulator of calvarial osteogenesis 1,2 and the phenomenon of calvarial reossification is well recognized in newborns and immature animals 1,3. The increased osteoinductive capacity of the immature dura is believed to be due to the increased expression of growth factors and extracellular matrix molecules 3. In older guinea pigs, small calvarial defects 3-5 mm in diameter were completely re-ossified spontaneously after 3 months, however defects more than 8 to 10 mm in diameter were not covered 4. The osteoinductive capacity of the dura to cover large craniectomy defects is generally lost in children above 2 years of age 5. Spontaneous re-ossification of large defects is possible, although rare in older children despite irradiation as demonstrated in this patient.

A 12-year-old girl presented two years after midline posterior fossa craniectomy and radical excision of a vermian medulloblastoma followed by prophylactic craniospinal irradiation. In the present visit, she had features of raised intracranial pressure and Brain CT showed extensive metastasis of the tumour in bilateral basifrontal regions. In addition, a bridge of new bone formation was seen almost completely covering the earlier craniectomy defect. (Figure 1A, 1B) She was referred for further systemic therapy. The dura mater and the periosteum is considered to be a regulator of calvarial osteogenesis 1,2 and the phenomenon of calvarial reossification is well recognized in newborns and immature animals 1,3. The increased osteoinductive capacity of the immature dura is believed to be due to the increased expression of growth factors and extracellular matrix molecules 3. In older guinea pigs, small calvarial defects 3-5 mm in diameter were completely re-ossified spontaneously after 3 months, however defects more than 8 to 10 mm in diameter were not covered 4. The osteoinductive capacity of the dura to cover large craniectomy defects is generally lost in children above 2 years of age 5. Spontaneous re-ossification of large defects is possible, although rare in older children as demonstrated in this patient.

**KEY WORDS:** Re-ossification, Calvarial defect, Craniectomy defect, Children

### EDİTÖRE MEKTUP

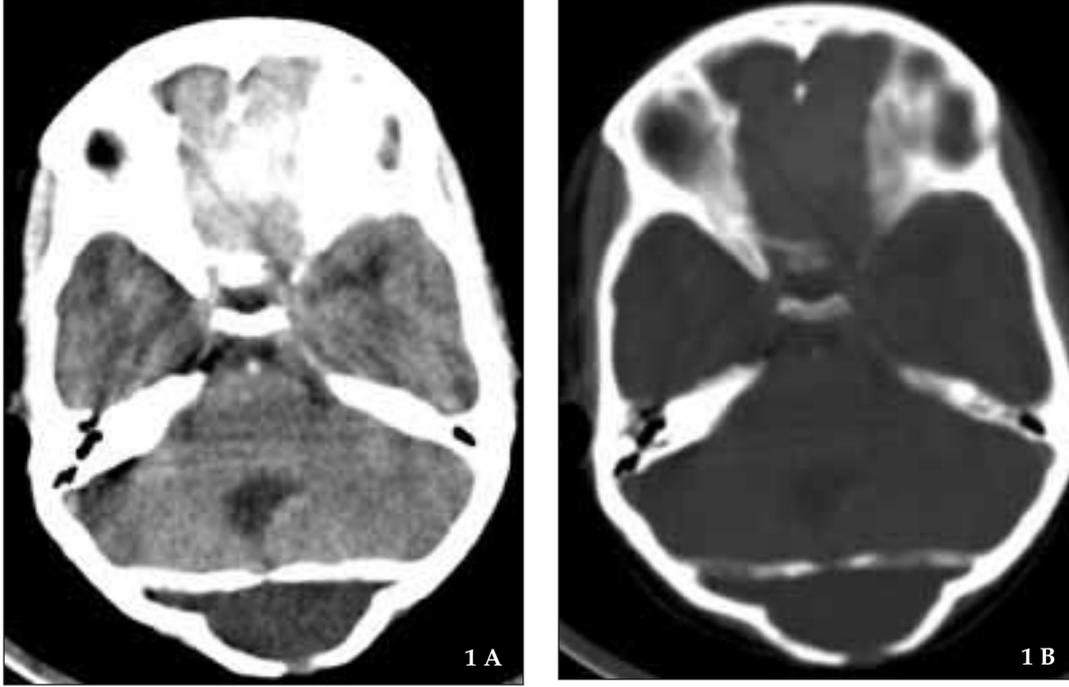
Orta hat posterior fossa kraniektomi yapılarak vermiş yerleşimli medullablastoma nedeni ile opere edilen ve postoperatif dönemde

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Received : 28.05.2008  
Accepted : 09.16.2008

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**Figure 1:** A: CT Brain, B: Bone windows show that the large dural defects are almost completely re-ossified by two separate layers of bone.

radyoterapi alan 12 yaşında kız çocuk vaka takdimi olarak sunulmaktadır. Son kontrolünde KİBAS bulguları olan hastaya çekilen kontrol beyin tomografisinde: bilateral frontal kaidede yaygın metastazları olduğu izlenmiştir, buna ek olarak; daha önceki kraniektomi defektini tamamen kapayan ve köprü tarzında olan yeni kemik oluşumu gözlenmiştir (Şekil 1A, 1B). Hasta kemoterapi için yönlendirildi. Duramater ve periosteum kalvarial osteogenesisiz oluşumunda düzenleyici role sahiptir, bu düzenleyici etki yenidoğanlarda ve immatür hayvanlarda gösterilmiştir. Büyüme faktörünün ekspresyonunun ve ekstrasellüler matriks moleküllerinin artışının immatür duramaterin artmış osteoindüktif kapasitesi ile ilişkili olduğu düşünülmektedir. İki yaşın üzerindeki çocuklarda duramaterin osteoindüktif kapasitesinin kaybolduğu kabul edilmektedir. Bu vakada spontan re-ossifikasyonun geniş defektlerde ve 2 yaşından büyük çocuklarda nadir de olsa görülebildiği gösterilmektedir.

**ANAHTAR SÖZCÜKLER:** Reossifikasyon, Kalvarial defekt, Kraniektomi defekti, Çocuklar

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