



# The Painful Ischiopubic Synchrondrosis: A Case Report

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## Abstract

Van Neck-Odelberg disease is considered a benign skeletal developmental abnormality seen in children, comprising hyperostosis of the ischiopubic synchrondrosis (IPS). During skeletal development, typically there is unilateral and asymmetric enlargement of the IPS of no pathological relevance. Nevertheless, in spite of being considered a physiological phenomenon, some children can be clinically symptomatic and experience unspecific groin pain and limping. Importantly, the diagnosis of IPS opsteochondritis cannot be established by radiographic findings solely and needs to be supported by the appropriate clinical scenario and by the exclusion of other causes such as neoplasia, stress fracture, osteomyelitis, and post-traumatic osteolysis. The role of imaging is essentially to exclude these causes.

**Keywords:** Musculoskeletal; Radiography; MRI; Osteochondrosis

## Case Presentation

### Clinical History

A 10-year-old boy presented with right groin pain and a limping leg aggravated after football practice.

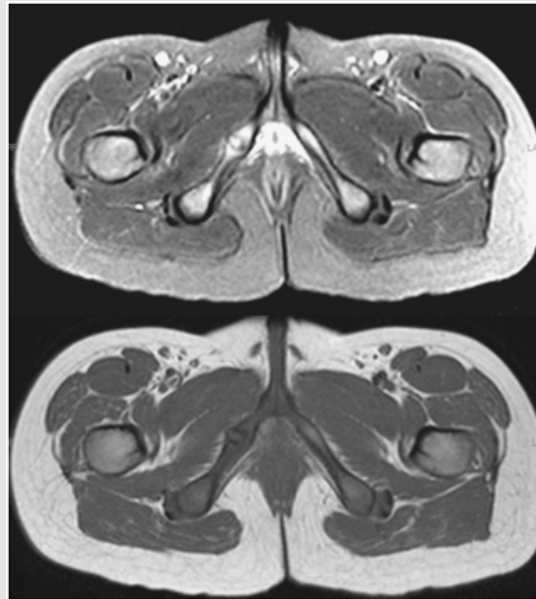
### Imaging Findings

In the hip radiographs (Figure 1), there was no evidence of an acute fracture, but a sharp asymmetric shadow was seen at the right

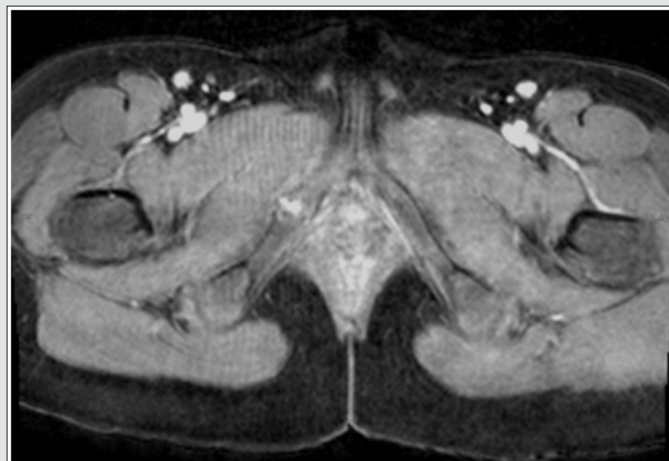
ischiopubic synchrondrosis with no associated periosteal reaction or soft tissue thickening. The triradiate cartilage and hip joint spaces were symmetric and unremarkable. The MRI (Magnetic Resonance Imaging) depicted a prominent asymmetric synchrondrosis of the right inferior pubic ramus with mild associated edema (Figure 2) and minimal enhancement (Figure 3). There was no evidence of fracture or stress response. These imaging findings in the current clinical setting lead to a diagnosis of VND.



**Figure 1:** AP radiographs of the Hip: A sharply demarcated asymmetric shadow was seen at the right ischiopubic synchrondrosis and extending into the obturator foramen, with no associated periosteal reaction or soft tissue thickening.



**Figure 2:** Bony pelvis MRI (Upper image T2FS ; Bottom image T1)- Assymmetric prominent right ischiopubic synchondrosis with hyperintense signal and mild surrounding soft tissue edema on fluid sensitive sequence and hypointense signal on T1.



**Figure 3:** Bony pelvis MRI, Axial T1 post intravenous paramagnetic contrast administration: There is mild enhancement of the asymmetric prominent right ischiopubic synchondrosis.

## Discussion

VND is a benign skeletal developmental abnormality seen in children, comprising hyperostosis of the ischiopubic synchondrosis (IPS), and it was first described by Odelberg and Van Neck in radiographs of prepubescents [1,2]. The IPS consists of cartilaginous tissue lying between the two ossification centers of the ischiopubic region: the superomedial pubic center and posterolateral ischial center [3,4]. IPS acts as a temporary joint between the ischium and pubis, and its ossification begins early in childhood completes before puberty [3,4]. In the latter stage of this process there is unilateral asymmetric enlargement, of no pathological relevance [4,5]. IPS are commonly asymmetric in asymptomatic children, with 50% of asymptomatic children of ages between 4-5 years old

exhibiting asymmetric closure of this site, which can persist for several years [6].

In spite of being considered a physiological phenomenon which some authors relate to mechanical stress conditioned by iliopsoas, adductors, and gemellus, leading to delayed union of the cartilage and ossification centers [4,5,7], some children can be clinically symptomatic and experience groin pain and limping, regarded by some authors as a consequence of the inflammatory reaction conditioned by the constant movement of the IPS [4,7].

## Clinical Perspective

Patients may complain of an unspecific groin or buttock pain [8]. The differential diagnosis includes stress fractures, osteomyelitis,

post-traumatic osteolysis or neoplasia [3,7,8]. Osteochondritis of the IPS is often a diagnosis of exclusion and laboratory test are generally unremarkable [7].

### Imaging Perspective

An enlarged and assymetric IPS is generally considered as an anatomical developmental variant [6], furthermore, the diagnosis of VND cannot be established by radiographic findings solely and needs to be supported by the appropriate clinical scenario and the primary role of imaging is to exclude other causes [3,5]. The typical finding of VNP in radiographs is of an asymmetric sharply circumscribed shadow located in the ischiopubic region extending towards the obturator foramen without periosteal reaction or soft tissue thickening [1,2,8]. CT (computed tomography) and MRI usually show asymmetric enlargement of the IPS, furthermore, on MRI there is hyperintense signal on T2 with fat saturation and STIR sequences and hypointense signal on T1, with fibrous bridging and fusiform swelling of the IPS [3,5,8]. There can be mild associated soft tissue edema and minimal post contrast enhancement [5]. Radiologically it can extend for several months to a year period, although when the ossification completes, no signs will subsist [7].

### Take Home Message, Teaching Points

- a) The Diagnosis of VND is clinically challenging and other entities such as stress fracture, osteomyelitis, post-traumatic osteolysis, should be excluded.

- b) Clinical symptoms are a must condition to identify a delayed unilateral ischiopubic synchondrosis as VND.
- c) Imaging value is in excluding other entities.

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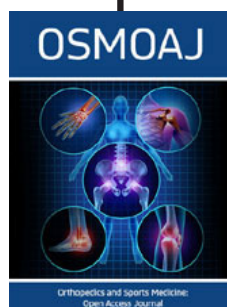


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