A CASE OF BIPARTITE PATELLA IN A PALEOCHRISTIAN NECROPOLIS IN MARSALA (ITALY)

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Abstract.
This report describes one case of bipartite patella in an adult male recovered from a Palaeochristian lay cemetery (III-IV centuries a.C. in Marsala (Sicily, Italy). Bipartite patella is a pathological condition rarely described in archaeological contexts, although it is a very well known lesion in orthopaedic and radiographic studies. The disease seems to be more common in males, and there is no clear relationship with developmental and morpho-functional issues. This case report adds new data to the sparse literature on this pathological trait.

Introduction
The incomplete ossification of one bone of the knee joint, the patella, known clinically as bipartite patella (patella partita), is a rare finding in archaeology, and not a very frequently described subject in palaeopathological bibliographies.

The first description of this condition in a medical context, discovered at autopsy, was made by Gruber (1883). Since this report, additional cases have been described in the medical literature (Wright, 1904; Saupe, 1921; Adams & Leonard, 1925; Pass, 1931; Blumeensaat, 1932; George, 1935; Stuke, 1950; Shulman, 1955, Resnick & Niwayama, 1981; Tachdjian, 1990; Silverman & Kuhn, 1993; Duthie & Bentley, 1996), and also in the osteological and anthropological literature (Finnegan, 1978; Mann & Murphy, 1990; Scapinelli & Capasso, 2000; Scheuer & Black, 2000; Anderson, 2002).

Saupe (1921) classified bipartite patella in three different types, based on the position of the accessory ossification centre. Type I (5%) involves the apex of the bone; type II

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(20%) involves the lateral side of the patella and has a longitudinal expression; and type III (75%) involves the lateral crest.

Different authors indicate a predominance of this condition in males, with a prevalence ranging from 70% to 90-100% (D’Alò & al., 1962; Blumeensaat, 1932).

According to Green (1975) the bilateralism of the condition is rather common (43%).

The incomplete ossification of the left patella was discovered in an adult individual found in Marsala (Trapani, Sicily, Italy), in September 2004, during the excavation of the Necropolis of San Giovanni, at the “Parco Archeologico” of the town. On the basis of different lines of evidence, the site has been described as a lay cemetery of the Palaeocristian Period, and chronologically ascribed to the III-IV centuries a.C.

The Necropolis is not very large; several skeleton remains, representing a minimum number of 30 individuals on the base of standard criteria (Marella, 2003) were recovered.

**The case report.**

The object of the report was found in an ossuary containing four different adults, overlying one after the other. A meticulous excavation and laboratory reconstruction, allowed the attribution of this patella to the individual “O1”, identified as male on the base of anthropometrical and anthropological traits (Bruzek, 2004; Murail & al, 2005). The other three individuals have been identified as females.

On the base of the dental damage and wear (Miles, 1963; Meindl & Lovejoy 1985) the age at death of this individual was estimated at approximately 40 years.

“Specimen O1” consists of the calvarium, the mandible, a well preserved pelvis, a complete right upper limb, and a very fragmented left upper limb; the lower limbs include only the complete femurs and tibias. An asymmetry in the stress indicators on the right upper limb is clearly visible: the humerus presents a very well developed tuberositas deltoidea, the ulna is characterised by a enthesopathy at the level of the pronator and pronator quadratus, and the radius has a large enthesopathy at the insertion of the distal portion of the biceps. No particular indications of asymmetry or muscular-related bone stresses are evident in the lower limbs.

The patella from the left leg shows a lack of ossification of the lateral side (Figs. 1 and 2), where the bone is porous and the surface is rough-edged (Fig. 3). The specimen is lacking the normal lateral portion of the bone. On the basis of these indicators, according to Saupe (1921), the pathology can be diagnosed as *Patella partita* type II.

The right patella is badly damaged and not available for a diagnosis or for comparative analysis.
Figure 1. The left patella of a 40-41 year old male (Specimen O1) displaying a ‘fracture line’ running through the supero-lateral apex.

Figure 2. The different patterns of ossification in the patella (modified from Anderson 2002).

Figure 3. Stereomicroscopic view of the surface of the super-lateral ridge of the left patella. Note the deficit in ossification.

Patella partita can erroneously be attributed to a fracture related to a traumatic event (Anderson, 2002). It is generally characterised by one or more vertical discontinuities in the different centres of ossification of the bone (Soren & Waugh, 1994). Additional ossification centres may become apparent in the adolescent period, the most common being the supero-lateral border location, where the margin remains irregular (Baker & al., 2005). During development it may then fuse with the main centre of ossification or remain separated from it, and form a bipartite patella, with the two parts being joined by fibro-cartilaginous tissue. This condition may be disrupted by minor injury and result in an excruciatingly painful condition, in

Clinics, Diagnostics, and literature data on Patella Partita.

This pathology, well known in the orthopaedic literature mainly through fortuitous radiological diagnosis (Resnick & Niwayama, 1981; Scapinelli & Capasso, 2000) is normally described as a rarely symptomatic congenital condition.
which the excision of a bone fragment may be the most favourable option.

The development of this situation before puberty is undoubtedly influenced by the tensile forces applied by the quadriceps femoris during the development of the individual (Ogata, 1994). Further, abnormal muscular traction by the vastus lateralis associated with possible vascular insufficiency is thought to play a role (Scapinelli & Capasso, 2000).

In some case the abnormal patella can be the source of persistent pain and the cause of complete disability in the knee.

Conclusion.

This case report describes a rare case of bipartite patella in an archaeological contest. The specimen is from an adult male characterised by an intense right asymmetry in the upper right limb, who presumably used his right hand for work or related activities (possibly because his left arm was occupied by the use of a walking stick). The impossibility of using the other patella for comparative purposes limits our analysis.

As noted in the medical literature, this condition is more common in males. The typology of the longitudinal bipartition of the bone of the knee identifies this example as ‘type II’ that, according to the literature, represents a moderate expression of the defect in Saupe’s (1921) disease typology.

References.
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