

An Alternative Surgical Approach to Pseudoainhum: A Case Report

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ABSTRACT

Pseudoainhum is a disorder of unknown etiology that is usually congenital and nonprogressive. One theory states it is caused by amnion band constriction in utero. These constriction bands lead, not only to a less cosmetically appealing foot, but also to long-term neurovascular compromise, resulting in amputation of the digit. The described surgical approaches have been limited within published data. The 2 procedures that have been described are either a Z-plasty or amputation, depending on the degree of the deformity. The present case report provides an alternative surgical approach to a pseudoainhum deformity of a third digit.

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Ainhum, or dactylosis spontanea, is a progressive annular strangulation of either the toes or fingers, which culminates in spontaneous amputation. Ainhum was first described by Clark and further named and described by Da Silva Lima from Bahia, Brazil, in 1867 (1–3). The disease usually affects the fifth toe but, in rare cases, can affect other digits and even fingers. It is of unknown etiology; however, infection and angiodysplasia have been discussed as possible etiologies.

Ainhum should not be confused with congenital constriction band syndrome or pseudoainhum, which is rare condition, occurring in every 1:10,000 births (4,5). In 1949, Birch-Jensen surveyed the population in Denmark and found an incidence of 1:48,500, which excluded trunk and lower extremity cases (6). Pseudoainhum occurs as a secondary event that leads to annular constriction of the digits. In contrast, ainhum is a primary progressive strangulation of the digit (7). Historically, 3 main varieties have been described for pseudoainhum. The first is a congenital band caused by the umbilical cord. The second is an acquired constricting band secondary to trauma (ie, mechanical injury, infection, underlying disease process). The third is constriction by hair, threads, or fiber and is commonly seen in children (8).

The etiology of pseudoainhum has also been divided into hereditary and nonhereditary causes. The hereditary causes reported in the published data included pachyonychia and mutilating keratodermas (Mal de Meleda) (9,10). Nonhereditary diseases include vascular disorders, systemic sclerosis, diseases that result in sensory changes, scar

formation, and psoriasis. However, the most current explanation of the etiology of congenital band syndrome is that the constriction is formed from ruptured amnion in utero that either causes permanent constrictions or amputations in utero (5).

The treatment options for congenital constriction bands depend on the extent of the deformity. Shallow grooves require no treatment. Deeper grooves that interfere with circulation or the lymphatics should undergo surgical intervention. The surgical approaches have been limited in published studies. The only 2 procedures that have been described are either Z-plasty or amputation. Z-plasty incisions have been described in association with this deformity when treated as deep constrictions. It is usually performed in 2 or 3 stages to minimize vascular compromise (5).

The present case report describes the case of a 22-year-old female who had elected to undergo surgical intervention for her third digit pseudoainhum deformity. Owing to the limited published surgical options for this patient, we present an alternative to the Z-plasty with favorable outcomes.

Case Report

A 22-year-old female presented to the clinic with a chief complaint of a deformed third digit on her right foot. The patient stated that the deformity had been present for as long as she could remember and believed it was present since birth. The patient stated that her toes were not painful, but she found it difficult to wear shoes at times.

The patient's medical history was significant for seizure disorder and the use of tobacco products. The patient denied any family history of a similar toe deformity and had undergone no previous treatment. The patient did not present with this deformity on any other digit on her hands or feet.

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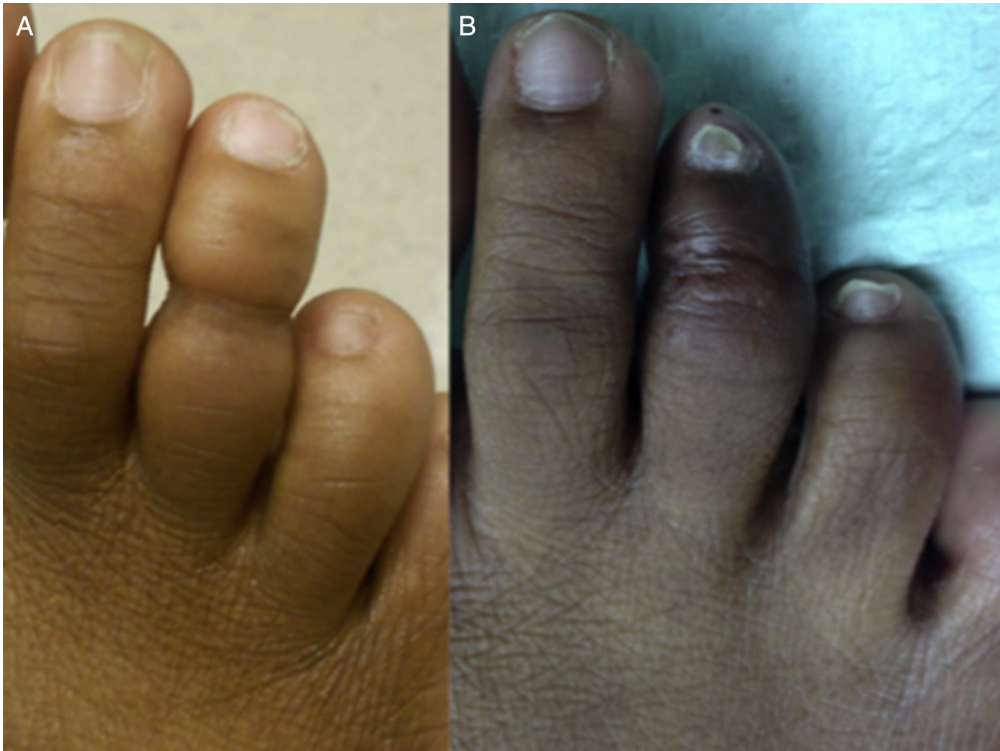


Fig. 1. (A) Preoperative view. (B) View at 6 months postoperatively.

Examination of the patient's right foot revealed a circumferential band with narrowing around the center of the third digit (Fig. 1A). On vascular examination, the patient had palpable pedal pulses with a capillary refill time of <3 seconds. The patient had neurologic function intact to all the digits. Radiographic evaluation revealed some narrowing of the central middle phalanx, with no evidence of fracture (Fig. 2). At this point, the patient was educated on her deformity and informed that surgical intervention could result in the loss of the digit secondary to the nature of the deformity. The patient was also instructed to quit smoking, because it could increase her risk of losing the digit. The patient still elected to proceed with surgical correction of the deformity.

The operative plan was to transversely ellipse the constricted skin dorsally (Fig. 3), being careful to preserve the medial and lateral neurovascular bundles. Although the constricted band was circumferential and the ellipse would only excise the dorsal section, it was thought that preserving the vascularity was of the utmost importance in the present case. Next, with excision of the soft tissue, an arthroplasty was to be performed of the proximal interphalangeal joint.

Intraoperatively, after creating the transverse ellipse incision, it was noted that significant constriction (indentation circumferentially) was present around the middle phalanx (Fig. 4). At that point, it was determined that the constricted bone would be excised and a pseudojoint created to remove most of the deformity. The portion of middle phalanx that contained the band was then excised (Fig. 5), sent for pathologic examination, and a 0.045-in. Kirschner wire was inserted to stabilize the digit. The skin was closed using 3-0 Nylon suture. The findings from the pathology report were unremarkable and revealed only bone and soft tissue with rubbery tan skin and firm yellow-tan bone.

The postoperative course consisted of the patient continuing to weight bear as tolerated in a surgical shoe. The patient was followed up on postoperative day 6 and presented with increased venous



Fig. 2. Preoperative radiograph.

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