Acquired Digital Fibrokeratoma: A Five-Case Series Highlighting Clinical Variability and Successful Surgical Management

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Abstract

Background: Acquired digital fibrokeratoma (ADFK) is a rare benign fibroepithelial tumor. It affects the acral skin, predominantly the fingers and toes. Owing to its rarity and nonspecific clinical appearance, it is frequently mistaken for other benign digital lesions such as viral warts, cutaneous horns, periungual fibromas, and rudimentary supernumerary digits. Histopathological examination is essential for definitive diagnosis.
Case Series: This case series describes five patients with acquired digital fibrokeratoma. They presented with solitary, painless digital lesions of 2–5 years' duration. The patients were between 32 and 70 years of age. They comprised four males and one female. Lesions involved the thumb, index, middle, and ring fingers, with sizes ranging from 0.5 to 2.25 cm. A history of preceding minor trauma was elicited in two patients. Clinically, all lesions appeared as firm, skin-colored to pink papules or nodules with a characteristic hyperkeratotic collarette at the base. Three patients were treated with radiofrequency-assisted excision, while the remaining two underwent complete surgical excision. Histopathological evaluation confirmed the diagnosis in all excised specimens. Follow-up for 6–12 months demonstrated satisfactory healing with no postoperative complications or local recurrence.
Conclusion: Acquired digital fibrokeratoma should be considered in the differential diagnosis of persistent solitary lesions involving the digits. Recognition of its characteristic clinical morphology, supported by histopathological confirmation, enables accurate diagnosis and appropriate treatment. Complete surgical excision and radiofrequency-assisted removal are both safe and effective therapeutic options, providing excellent cosmetic outcomes with minimal risk of recurrence.
Keywords: Acquired digital fibrokeratoma; acral fibrokeratoma; benign fibrous tumor; case series; radiofrequency ablation; surgical excision.
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Introduction

Acquired digital fibrokeratoma (ADFK) is rare benign fibrous tumor of acral skin which primarily involves the fingers and toes. Since its original description by Bart and colleagues in 1968, it has been recognized as a distinctive fibroepithelial lesion presenting as a solitary, slowly enlarging papule or nodule[1]. Clinically, the lesion is typically skin-colored, firm, and hyperkeratotic, with a characteristic collarette at its base. Despite its distinctive histological features, ADFK is frequently overlooked in routine clinical practice because its appearance closely resembles several common benign lesions of the digits. This include viral warts, cutaneous horns, periungual fibromas, rudimentary supernumerary digits, pyogenic granulomas, and neurofibromas. Failure to recognize this entity may result in delayed diagnosis or inappropriate treatment [2]. The condition predominantly affects adults during the fourth to sixth decades of life and

has been reported slightly more often in males. Most lesions are solitary and measure less than 1 cm in diameter, although giant variants have occasionally been described. The fingers and toes, particularly the periungual region and the dorsal or lateral aspects of the digits, represent the most frequent sites of involvement. Patients generally seek medical attention because of cosmetic concerns, repeated trauma, bleeding, or interference with daily activities rather than pain. Also, these lesions usually exhibit slow growth and remain asymptomatic[3]. The exact pathogenesis of ADFK remains incompletely understood. Recurrent minor trauma, chronic friction, and localized inflammatory responses have been proposed as potential initiating factors. Histologically, the lesion is characterized by proliferation of fibroblasts with excessive deposition of dense collagen within the dermis. Immunohistochemical studies have demonstrated expression of factor XIIIa-positive dermal dendrocytes in some cases, suggesting that these cells may contribute to tumor development. Nevertheless, the precise mechanism responsible for lesion formation has not yet been clearly established[3,4].

Clinically, ADFK appears as a well-defined sessile or pedunculated papule with a smooth or hyperkeratotic surface. A hyperkeratotic collarette surrounding the base is considered a characteristic clinical feature. Based on morphological appearance, Kint and co-workers classified these lesions into dome-shaped, finger-like, and flat variants. Histopathological examination demonstrates compact hyperkeratosis, acanthosis, and densely packed vertically oriented collagen bundles interspersed with proliferating fibroblasts and numerous capillaries. These characteristic microscopic features are invaluable in distinguishing ADFK from other benign and malignant tumors involving the digits[5]. Because several digital lesions share similar clinical characteristics, establishing the correct diagnosis on clinical grounds alone may be challenging. Important differential diagnoses include viral wart, cutaneous horn, periungual fibroma associated with tuberous sclerosis, pyogenic granuloma, eccrine poroma, dermatofibroma, neurofibroma, superficial acral fibromyxoma, and rudimentary supernumerary digit. Consequently, histopathological examination remains the gold standard for definitive diagnosis and exclusion of other entities[6]. Complete surgical excision is considered the treatment of choice and is associated with excellent functional and cosmetic outcomes. Alternative therapeutic modalities, including shave excision, electrocautery, carbon dioxide laser therapy, and radiofrequency ablation, have also been successfully employed in selected patients. However, incomplete removal of the lesion, particularly at its base, may predispose to local recurrence, emphasizing the importance of complete excision[7]. Although numerous individual case reports have been published, reports describing multiple patients with ADFK remain relatively uncommon, particularly from India. Case series provide valuable information regarding the spectrum of clinical presentation, possible etiological factors, histopathological characteristics, treatment options, and long-term outcomes. The present series describes five patients with acquired digital fibrokeratoma involving different digits and highlights their clinical features, histopathological findings, management, and follow-up. Our experience underscores the importance of including ADFK in the differential diagnosis of solitary digital tumors and demonstrates that complete surgical excision, including radiofrequency-assisted removal where appropriate, is associated with excellent outcomes and absence of recurrence during follow-up.

Case Series

This case series includes five patients diagnosed with acquired digital fibrokeratoma (ADFK) who presented to the Department of Dermatology, Venereology and Leprosy at a tertiary care teaching hospital between 2024 and 2026. Each patient presented with a solitary digital lesion that had shown gradual enlargement over several years and was largely asymptomatic. A comprehensive clinical history was obtained, followed by detailed dermatological examination and routine laboratory investigations. Clinical diagnosis was established based on the characteristic appearance of the lesion, which typically consisted of a firm, skin-colored to pink papule or nodule that was either sessile or pedunculated and surrounded by a hyperkeratotic collarette at its base. Histopathological examination of excised specimens was performed to confirm the diagnosis.

The patients ranged in age from 32 to 70 years, with a predominance of males (four males and one female). Lesion duration varied between two and five years before presentation. The tumors involved different digits, including the thumb, index finger, middle finger, and ring finger. A preceding history of minor local trauma was elicited in two patients, whereas no identifiable precipitating event was reported by the remaining three, reflecting the Uncertain etiopathogenesis of this condition.

Table 1. Clinical Characteristics of Patients with Acquired Digital Fibrokeratoma

Management was individualized according to the size and location of the lesion. Three patients underwent radiofrequency-assisted excision, while conventional complete surgical excision was performed in the remaining two patients.

Case	Age/Sex	Site	Duration	Size (cm)	Trauma History	Clinical Type	Follow-up (Months)	Recurrence
1	70/M	Right ring finger	2 years	0.5×0.3×0.3	No	Dome-shaped	8	No
2	32/M	Left thumb	5 years	1.5×0.5×0.3	No	Finger-like	12	No
3	42/F	Right index finger	5 years	2×1	No	Pedunculated	12	No
4	40/M	Left ring finger	2 years	1.5×0.4	Yes	Finger-like	12	No
5	55/M	Right middle finger	3 years	2.25×0.5	Yes	Finger-like	6	No

Histopathological evaluation consistently demonstrated the characteristic features of acquired digital fibrokeratoma, including marked hyperkeratosis, acanthosis, and densely packed, vertically oriented collagen bundles containing proliferating fibroblasts within the dermis. Follow-up ranging from 6 to 12 months revealed satisfactory wound healing in all patients, with no postoperative complications or evidence of local recurrence, confirming the excellent prognosis associated with complete removal of the lesion.

Case 1

A 70-year-old man attended the Dermatology outpatient clinic with a solitary, asymptomatic lesion over the dorsal aspect of the right ring finger that had been present for two years. According to the patient, the lesion began as a small papule and gradually enlarged over time. There was no preceding history of trauma, pain, pruritus, bleeding, ulceration, or discharge. He denied similar lesions elsewhere on the body and had no relevant family history. Cutaneous examination revealed a well-circumscribed, dome-shaped, skin-colored papule measuring approximately 0.5 × 0.3 × 0.3 cm over the dorsal surface of the proximal phalanx of the right ring finger(Figure 1). The lesion was firm, smooth surfaced, and surrounded at its base by a distinct hyperkeratotic collarette. There was no surrounding inflammation, tenderness, ulceration, or regional lymphadenopathy. Based on the clinical appearance, acquired digital fibrokeratoma was considered the primary diagnosis, while viral wart, cutaneous horn, rudimentary supernumerary digit, and periungual fibroma were included in the differential diagnosis.

Figure 1- Clinical photograph showing a solitary, skin-colored dome-shaped papule with a characteristic hyperkeratotic collarette over the dorsal aspect of the right ring finger.

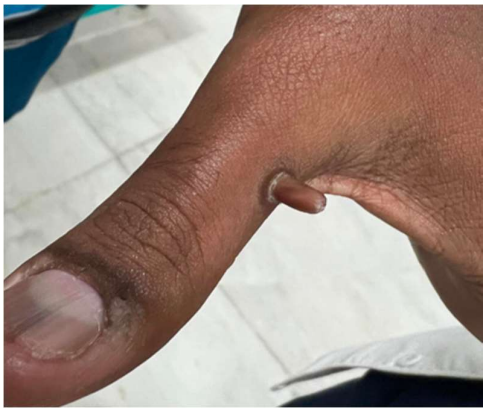
Radiofrequency-assisted excision was performed under local anesthesia. Histopathological examination confirmed acquired digital fibrokeratoma. Healing was uneventful, and no

recurrence was observed during eight months of follow-up.

Case 2

A 32-year-old male driver presented with a slowly progressive growth over the dorsal aspect of his left thumb that had been present for five years. The lesion remained painless throughout its course and was not associated with bleeding, discharge, or any other symptoms. There was no preceding history of trauma, and the patient had no similar lesions elsewhere. On examination, a solitary, elongated finger-like papule measuring approximately 1.5 × 0.5 × 0.3 cm was identified on the dorsal aspect of the left thumb. The lesion was skin colored, firm in consistency, and exhibited a smooth hyperkeratotic surface with a well-defined collarette at its base (Figure 2). The characteristic morphology strongly suggested acquired digital fibrokeratoma.

Figure 2- Finger-like skin-colored papule over the dorsal aspect of the left thumb



The lesion was excised using radiofrequency under local anesthesia. Histopathological findings were consistent with acquired digital fibrokeratoma. The postoperative period was uncomplicated, and the patient remained recurrence-free after one year of follow-up.

Case 3

A 42-year-old woman presented with a solitary lesion on the lateral aspect of her right index finger that had gradually increased in size over five years. The lesion was asymptomatic, with no associated pain, itching, bleeding, ulceration, or discharge. There was no history of preceding trauma or similar lesions in the past. Dermatological examination demonstrated a well-defined, pedunculated, skin-colored papule measuring approximately 2 × 1 cm on the lateral aspect of the right index finger(Figure 3**)**. The lesion was firm, smooth surfaced, and showed a prominent hyperkeratotic collarette surrounding its base. No additional cutaneous abnormalities were identified. The clinical findings were highly suggestive of acquired digital fibrokeratoma.

Figure 3- Pedunculated skin-colored papule over the lateral aspect of the right index finger.

Radiofrequency excision was carried out under local anesthesia. Histopathological evaluation confirmed the diagnosis. The surgical site healed satisfactorily, and no evidence of recurrence was noted during twelve months of postoperative follow-up.

Case 4

A 40-year-old man reported an asymptomatic growth over the dorsal surface of the left ring finger that had progressively enlarged over a period of two years. The patient recalled a minor traumatic episode before noticing the lesion. There was no history of pain, bleeding, ulceration, or discharge. Physical examination revealed a solitary pinkish, finger-like hyperkeratotic papule measuring approximately 1.5 × 0.4 cm over the dorsal aspect of the left ring finger(Figure 4). The lesion was firm and demonstrated a characteristic hyperkeratotic collarette at its base. The overall clinical appearance was typical of acquired digital fibrokeratoma.

Figure 4- Finger-like pinkish papule over the dorsal aspect of the left ring finger.

Complete surgical excision was performed under local anesthesia. Microscopic examination showed marked hyperkeratosis and acanthosis with vertically arranged dense collagen bundles containing proliferating fibroblasts within the dermis, confirming the diagnosis of acquired digital fibrokeratoma. Recovery was uneventful, and no recurrence was detected during one year of follow-up.

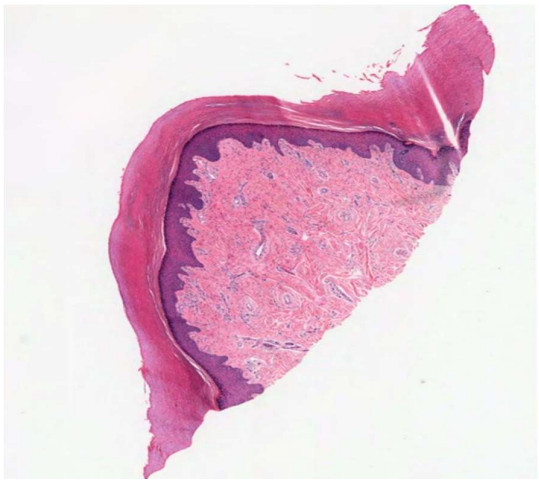
Case 5

A 55-year-old man presented with a gradually enlarging, asymptomatic lesion involving the dorsolateral aspect of the right middle finger. The lesion had been present for approximately three years. He reported a history of minor trauma before its appearance but denied pain, bleeding, ulceration, or discharge. Examination showed a solitary finger-like, skin-colored papule measuring approximately 2.25 × 0.5 cm over the dorsolateral surface of the right middle finger(Figure 5). The lesion was firm in consistency with a smooth surface and a distinct hyperkeratotic collarette at its base. Based on the clinical findings, acquired digital fibrokeratoma was considered the most likely diagnosis, with viral wart, cutaneous horn, and periungual fibroma included in the differential diagnosis.

Figure 5- Skin-colored finger-like papule over the dorsolateral aspect of the right middle finger.

The lesion was treated by complete surgical excision under local anesthesia. Histopathological examination demonstrated features characteristic of acquired digital fibrokeratoma. The postoperative period was uncomplicated, and no evidence of local recurrence was observed during six months of follow-up.

Figure 6- Histopathological section showing hyperkeratosis and dense collagen bundles



Discussion & Conclusion

Acquired digital fibrokeratoma (ADFK) is an uncommon benign fibroepithelial neoplasm of the acral skin that most frequently involves the fingers and, less commonly, the toes. Despite being recognized as a distinct clinicopathological entity since its initial description by Bart et al. in 1968, it continues to be infrequently reported in the literature. Because of its rarity and its resemblance to several common digital lesions, ADFK is often overlooked during initial clinical evaluation. Consequently, lesions may be misdiagnosed as viral warts, cutaneous horns, periungual fibromas, pyogenic granulomas, or rudimentary

supernumerary digits, leading to inappropriate treatment and delayed definitive management[1].

The patients included in the present series ranged from 32 to 70 years of age, with a predominance of males. These findings are comparable with previous reports, which describe ADFK as occurring mainly in middle-aged adults with a slight male preponderance. All lesions were solitary, slowly progressive, and asymptomatic, with disease duration ranging from two to five years. The prolonged duration before presentation reflects the indolent biological behaviour of the tumor and the fact that most patients seek medical attention only after progressive enlargement, recurrent trauma, or cosmetic concern[5].

Although the lesions occurred at different digital sites, they shared several characteristic clinical features. Each lesion presented as a firm, skin-colored to pink papule or nodule with a well-defined hyperkeratotic collarette surrounding its base. This distinctive collarette remains one of the most useful clinical clues in recognizing ADFK. Morphologically, the lesions demonstrated both dome-shaped and elongated finger-like configurations, corresponding to the clinical variants originally described by Kint and colleagues[5]. Recognition of these characteristic patterns facilitates distinction from other benign acral tumors and helps avoid unnecessary destructive procedures performed for presumed viral warts.

The pathogenesis of acquired digital fibrokeratoma has not been fully elucidated. Repeated minor trauma, chronic mechanical irritation, and localized fibroblast proliferation have all been proposed as possible initiating factors[8]. In the present series, two patients recalled antecedent minor trauma before the appearance of the lesion, whereas no precipitating event was identified in the remaining patients. These observations suggest that trauma may contribute to lesion development in susceptible individuals but is unlikely to represent the sole pathogenic mechanism. Similar conclusions have been drawn in previously published case reports, indicating that multiple factors are probably involved in the development of this tumor [5].

Histopathological examination remains indispensable for establishing the diagnosis because several benign and malignant acral lesions share overlapping clinical features. The excised specimens in the present series consistently demonstrated compact hyperkeratosis, acanthosis, and dense vertically arranged collagen bundles containing proliferating fibroblasts within the dermis. These findings are characteristic of ADFK and allow reliable differentiation from lesions such as viral wart, periungual fibroma, superficial acral fibromyxoma, dermatofibroma, and cutaneous horn[9]. Correlation between the clinical appearance and histopathological findings was observed in all cases, reinforcing the importance of tissue examination for diagnostic confirmation.

Complete removal of the lesion remains the cornerstone of treatment. Various therapeutic modalities, including conventional surgical excision, shave excision, electrocautery, carbon dioxide laser therapy, and radiofrequency ablation, have been described with favorable outcomes[5,10]. In the present series, radiofrequency ablation was successfully employed in three patients, while two patients underwent complete surgical excision. Both treatment modalities achieved satisfactory cosmetic results without postoperative complications. During follow-up ranging from six to twelve months, no patient developed local recurrence, emphasizing that complete removal of the lesion, particularly its base, is essential for preventing recurrence.

The present case series adds to the limited literature on acquired digital fibrokeratoma by demonstrating the clinicopathological diversity of this uncommon lesion. The cases illustrate variation in patient age, lesion morphology, anatomical location, and antecedent history of trauma while consistently exhibiting the characteristic histopathological features of the disease. The favourable outcomes achieved with both radiofrequency ablation and conventional surgical excision further support these techniques as effective therapeutic options.

In summary, acquired digital fibrokeratoma should be considered in the differential diagnosis of any persistent solitary papule or nodule arising on the digits. Careful clinical assessment combined with histopathological confirmation enables accurate diagnosis and appropriate treatment. Early recognition of this uncommon entity can prevent misdiagnosis, avoid unnecessary therapeutic interventions, and ensure excellent functional and cosmetic outcomes with a very low likelihood of recurrence.

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