CASE REPORT

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Epidermoid Cyst after Groin Flap Mimicking Malignancy

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Epidermoid cyst is a benign tumor containing a layer composed by stratified squamous epithelium and filled with keratin. The epidermoid cyst after soft tissue damage such as bite, laceration could be caused by implantation of epidermal cells. There are reports of epidermoid cyst rarely occurred after surgical procedures such as bone graft or spine puncture. However, the report of epidermoid cyst associated with flap in the hand is very rare. We experienced such epidermoid cyst after the groin flap mimicking malignancy in the distal phalanx of the thumb. We found calcified mass with bony erosions in radiologic findings and heterotrophic signals and partial necrosis in magnetic resonance imaging that suggested malignancy. However, it was pathologically diagnosed as an epidermoid cyst. Therefore, we report the case and literature review.

Keywords: Epidermoid cyst, flap

INTRODUCTION

Epidermoid cyst is a benign tumor containing a layer composed by stratified squamous epithelium and filled with keratin[1]. Epidermoid cyst commonly occurs in the soft tissues in a subcutaneous location[1]. They commonly present with swelling, pain, and tenderness. Epidermoid cyst after soft tissue damage such as bite, laceration could be caused by implantation of epidermal cells. However, the report of epidermoid cyst associated with flap in the hand is very rare[2,3].

We experienced such epidermoid cyst after the groin flap mimicking malignancy in the distal phalanx of the thumb. Therefore, we report the case and literature review.

CASE REPORT

A 41-year-old male patient visited to our clinic with a mass and pain of the left thumb tip. On past history, he underwent groin flap 8 years ago due to degloving injury of thumb. The mass was first noticed 4 years ago, and got bigger accompanying pain. In physical exam, relatively solid, immobile 2×1 cm sized mass was found

in left dorsal tip of thumb (Fig. 1). There were no sign of infection such as skin flare or redness. On radiological finding, soft tissue swelling with calcific material was shown (Fig. 2). The Computer tomography (CT) showed calcification mass with cortical erosion of the dorsal cortex of distal phalanx of thumb (Fig. 3). On the magnetic resonance imaging (MRI) finding, 23×13 mm low signal mass showed segmented horn shape growing from dorsal distal interphalangeal joint to distal area on T1 and T2 weighted and fat suppression image. In the distal fatty part of mass, showing heterogeneous enhancement with necrotic change suggested malignant tumor such as liposarcoma (Fig. 4). The biopsy was performed for different

Fig. 1. The patient had solid, immobile 2×1 cm sized mass that was found in left dorsal tip of thumb.

Fig. 2. On radiological finding, soft tissue swelling with calcific material was shown.

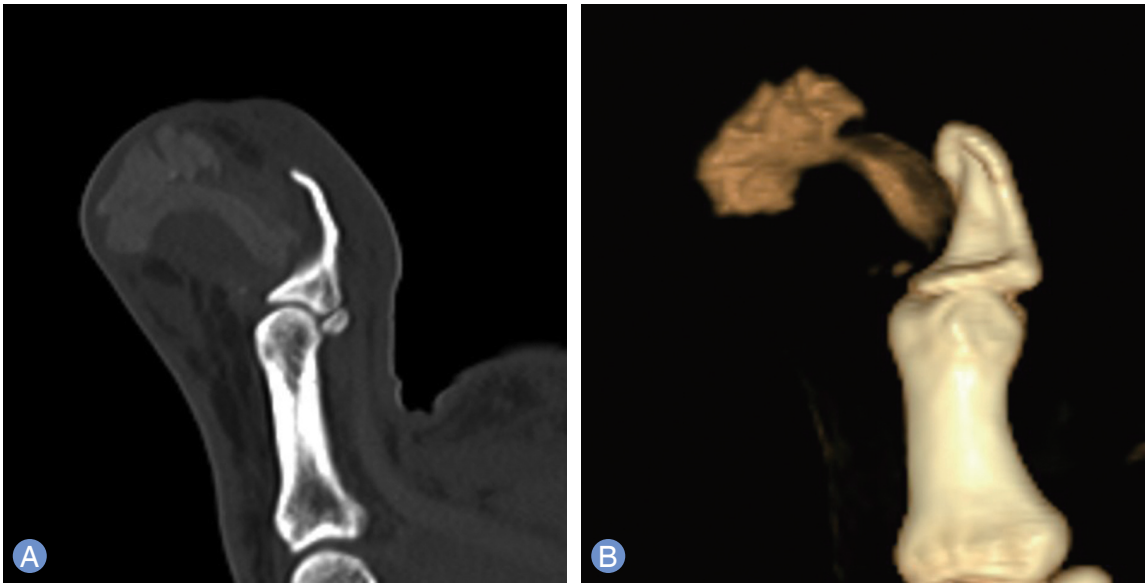

Fig. 3. (A, B) The computed tomography showed calcification mass with cortical erosion of the dorsal cortex of distal phalanx of thumb.

diagnoses. In the Intraoperative finding, the milk-white color mass was enveloped with a thin membrane with included calcified tissue without involvement of surrounding tissue (Fig. 5). In frozen biopsy, no evidence of malignancy, therefor marginal excision was performed. On the histopathological examination, the mass was composed with dense keratin with squamous epithelium, therefore it was diagnosed epidermoid cyst (Fig. 6). After excision of the mass, symptoms disappeared, and there were no recurrence on 5 years of follow up.

DISCUSSION

Epidermoid cyst has been called epidermal inclusion cyst, epithelial cyst, implantation dermoid, keratin or squamous epithelial cyst[1]. Epidermoid cyst can be divided in congenital or acquired.

The congenital epidermal cyst is caused by ectoderm

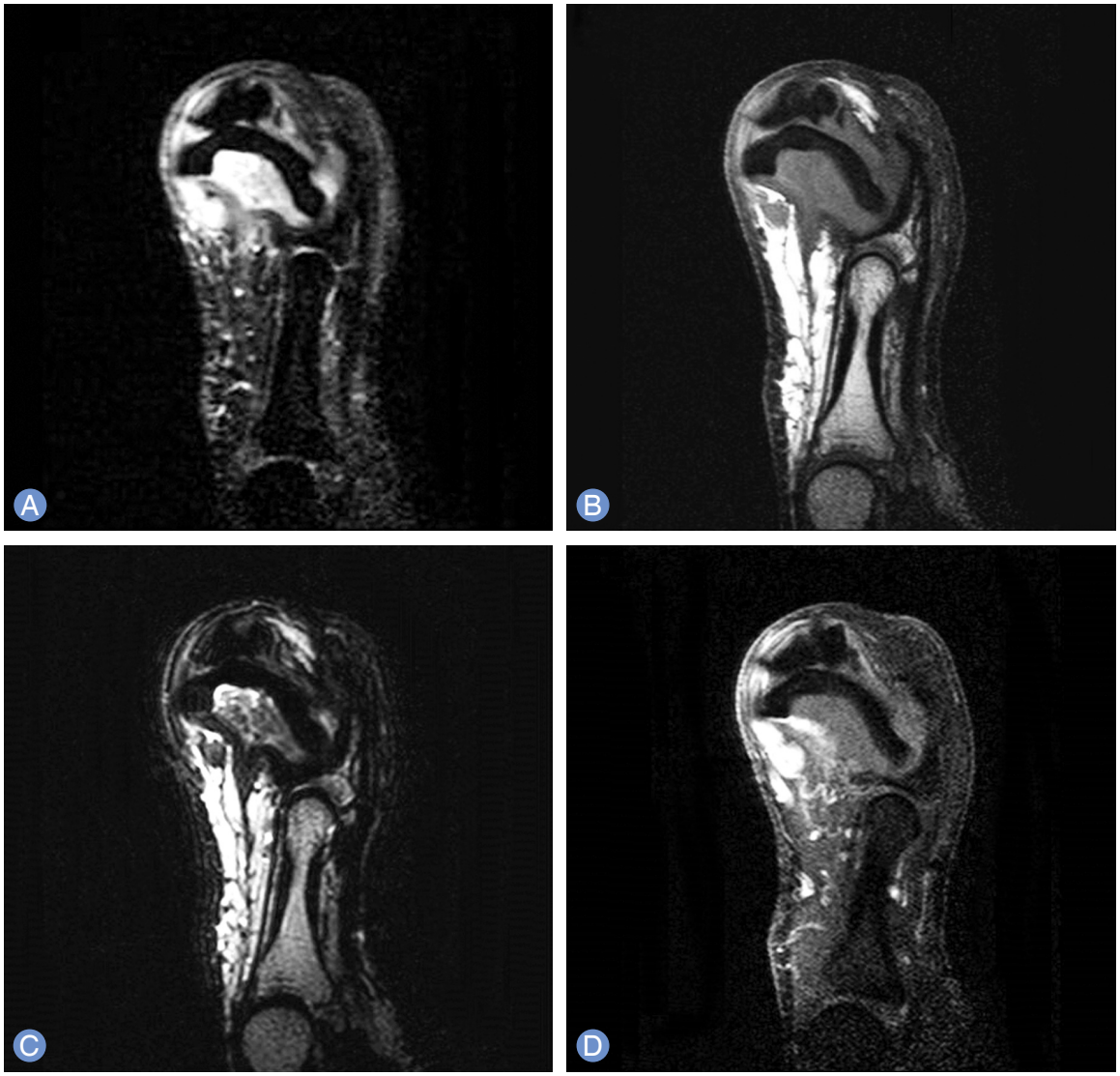

Fig. 4. (A) Fat suppression Image. **(B)** T1-weighted image, **(C)** T2-weighted image, **(D)** gadolinium enhanced Image. On magnetic resonance imaging finding, 23×13 mm sized low signal mass showed segmented horn shape growing from dorsal distal interphalangeal joint to distal area. This mass contained fat tissue on T1, T2 and fat suppression image. In the distal fatty part of mass, heterogeneous enhancement with necrotic change was shown suggesting malignant tumor such as liposarcoma on T1 and gadolinium enhanced image.

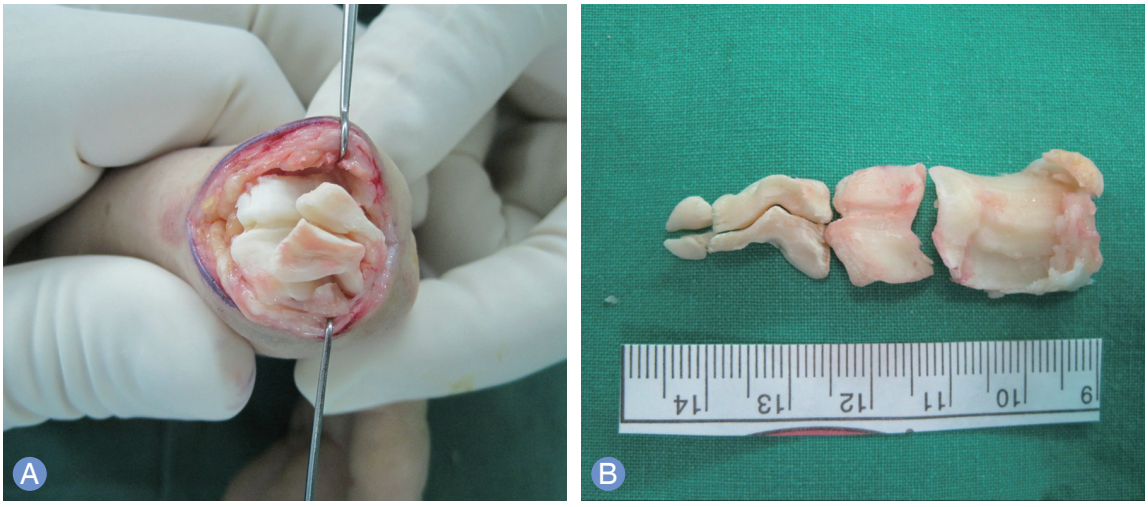

Fig. 5. (A, B) In the Intraoperative finding, the milk-white color mass was enveloped with a thin membrane with included calcified tissue without involvement of surrounding tissue.

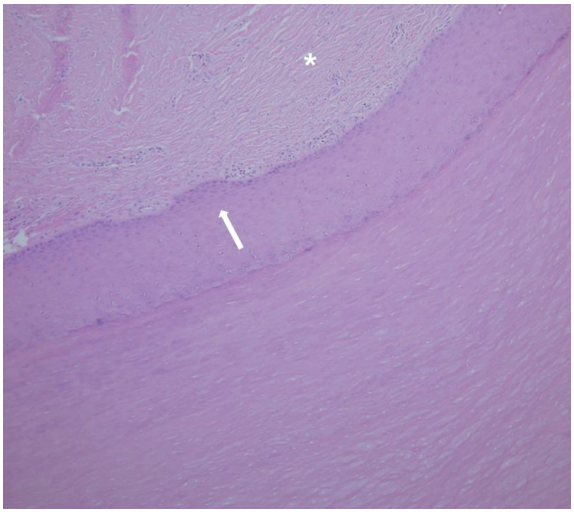

Fig. 6. Microscopic examination of cyst composed with dense keratin (asterisk) with squamous epithelium (arrow). Therefore, it was diagnosed epidermoid cyst (H&E, ×100).

tissue implant when neuropore or other epidermal wrinkle closes[1]. The acquired epidermal cyst is caused by growth of post-traumatic implanted epithelial epidermal tissue forming an epithelial cell composed cyst[1,4,5].

Proper soft tissue treatment is important when operating reconstructive flap after soft tissue damage of digit. Penny and Hooper[3] first reported two cases of epidermoid cyst after pedicle flap. A mass with discharge was developed at fingertip of flap site in 25 and 50 years old man who underwent pedicle groin flap on thumb 17 years ago and pedicle pectoralis flap on middle finger 22 years ago respectively. Excision of mass was conducted and histological examinations showed epidermoid cysts. Penny and Hooper[3] said when flap was performed without removing germinal matrix of nail bed perfectly, nail could grow inside the flap, and the epidermal cell coming out as nail grows can form a cyst. Park et al.[6] reported epidermoid cyst after flap for thumb degloving injury. Initially this case was misdiagnosed with chronic osteomyelitis, and symptom was aggravated despite of antibiotic treatments. After complete removal of cyst, the result was satisfactory without recurrence. Hwang et al.[5] reported multiple epidermal cyst after bone graft in thumb and Van Tongel et al.[7] described a case of an epidermoid cyst in the distal phalanx of the fifth finger caused by chronic nail biting. In this case, authors consider that it is caused by ectoderm tissue implant during flap operation of degloving injury, therefore epidermal cyst was developed.

It has to be considered that the differential diagnosis for the epidermal cyst include inflammatory disease, benign and malignant tumor. Benign tumors include warts, fibroma, fibrokeratoma, keratoacanthoma, and osteochondroma. Malignant tumors include squamous cell carcinoma, malignant melanoma, amelanotic melanoma, and glomus tumor[5].

Malignant transformation of epidermal cysts is very rare and Simon et al.[8] reported squamous cell carcinoma

arising from an epidermal cyst in the thumb. Fisher et al.[9] suggested MRI to be useful for characterizing the extent of epidermoid cysts and confirming their benign nature. However, In this case, it was difficult to differentiate with malignant such as osteolipoma or liposarcoma, because we found bony erosions with calcification in radiologic findings and heterotropic signals and partial necrosis in MRI. In histopathological finding, squamous cells with variable thickness and keratin were seen so it was diagnosed as epidermal cyst. Therefore, histological confirmation is required for resected epidermal cysts to exclude malignant transformation.

The treatment plan for epidermal cyst in distal carpal bones is simple excision. Hwang et al.[5] said that bone infiltration confirmed by clinical features, X-ray image, and ultrasonography finding, then resection was done completely. In our case, epidermal cyst was removed completely including even some of the surrounding normal tissues. There is no sign of recurrence during follow-up.

This is a case report of epidermal cyst occurred after the groin flap of thumb. Authors consider that it is caused by ectoderm tissue implant during flap operation of degloving injury. Therefore, adequate debridement should be performed during flap operation to prevent implantation of the epithelial cell.

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서혜부 피판술 후 발생한 악성 종양으로 오인된 상피성 낭종

강홍제[1] · 우영하[2]
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상피성 낭종은 케라틴(keratin)을 함유하는 편평상피로 이루어진 양성 종양으로 교상, 열상 등과 같은 연부 조직 손상 후에 표피 세포가 감입되어 발생한다고 알려져 있다. 드물게 골이식 혹은 요추 천자 같은 수술적 치료 후 발생한 상피성 낭종에 대한 보고는 있지만, 피판술 후 발생한 상피성 낭종에 대한 보고는 거의 없다. 저자들은 무지의 탈장갑 손상 후 서혜부 피판술을 시행한 환자의 자기공명영상 검사에서 골침식을 동반한 석회화된 종괴, 불균일한 조영 증강, 그리고 부분적 괴사 소견으로 악성을 의심하였으나, 병리학적으로 상피성 낭종으로 진단된 환자를 경험하였기에 문헌 고찰과 함께 증례 보고를 하고자 한다.

색인단어: 상피성 종양, 피판술

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