



## Short communication

# Bone erosion and subacromial bursitis caused by diphtheria–tetanus–poliomyelitis vaccine



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## ABSTRACT

Revaxis<sup>®</sup> is a vaccine against diphtheria, tetanus and poliomyelitis (dT-IPV). This vaccine should not be administered by the intradermal or intravenous route. Poor injection techniques and related consequences are rare.

We report a case of bursitis associated with reactive glenohumeral effusion complicated by bone erosion occurring after injection of the dT-IPV vaccine. A 26 year old patient was admitted for painful left shoulder causing functional impairment. Control magnetic resonance imaging showed bone oedema on the upper outer part of the humeral head, with a slight cortical irregularity, indicating that the vaccine was injected in contact with the bone at this location, causing erosion. Outcome was favourable after intra-articular corticosteroids.

Reports of articular or periarticular injury after vaccination are extremely rare, in view of the substantial number of vaccines administered every year. The potential complications of vaccination are well known to general practitioners but under-reported in the literature.

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## 1. Introduction

Revaxis<sup>®</sup> is a vaccine against diphtheria, tetanus and poliomyelitis (dT-IPV). This inert vaccine contains purified diphtheria toxoid, purified tetanus toxoid, inactivated poliomyelitis virus and aluminium hydroxide as adsorbant [1]. The excipients are phenoxethanol, formaldehyde, acetic acid or sodium hydroxide to adjust the pH level, and Medium 199 containing in particular amino acids, mineral salts, vitamins and water for injections [1]. The safety of this vaccine is well established [1–4]. Reactions such as pain and redness at the injection site in the vaccinated limb are mostly predictable and are usually benign and of short duration [2–4]. Among the possible local and systemic reactions, musculoskeletal disorders are rare. According the Summary of Product Characteristics for the vaccine, the main side effects are myalgia (uncommon) and arthralgia (rare) [1,3,4]. Undesirable effects such as oedema, inflammation, numbness, paraesthesia and involuntary contractions occur in <1% of subjects [1,3,4].

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The recommended mode of administration of the Revaxis vaccine is by intramuscular or deep subcutaneous injection [1], and it must not be administered by the intradermal or intravenous route. The recommended injection site is the deltoid region. Cases of poor injection technique and associated consequences are extremely rare. We report a case of bone erosion and bursitis associated with reactive glenohumeral effusion occurring after injection of the dT-IPV vaccine.

## 2. Case report

A 26-year old female patient consulted the rheumatology department in an emergency for a painful left shoulder causing functional impairment. She had no medical history. The pain had started 48 h before admission after receiving Revaxis<sup>®</sup> vaccine in the upper third of the left deltoid during a work-related medical check-up. During the administration, the patient had felt a slight discomfort and the physician had noted some resistance to the injection (0.6 × 25 mm needle, 23 G). On clinical examination, the patient had no fever, and no signs of inflammation, except for suspected joint effusion. Active and passive mobilisations were comparable (abduction 50°, external rotation 45°, and anterior elevation 100°). Examination of the contralateral shoulder was normal. On the left side, all tendon and muscle

**Table 1**

Vaccine-related shoulder injuries reported in the literature (Medline and Scopus).

Report	Age	Sex	Injection site	Vaccine	Symptoms	Diagnosis	CRP	Aspirate performed	Treatment	Outcome
Bodor and Montalvo [16]	71	F	Deltoid	PPV	Pain, difficulty moving arm	SAB	–	No	Physiotherapy, pt declined corticosteroid injection	Favourable
Bodor and Montalvo [16]	89	M	Deltoid	Flu	Severe pain, loss of range of motion	SAB, bicipital tendonitis	–	No	Physiotherapy, subacromial corticosteroid injection	Favourable
Uchida et al. [17]	45	F	Deltoid	HPV	Pain, limited movement	SAB	Normal	No	Subacromial corticosteroid injection, arthroscopic debridement	Favourable
McColgan and Borschke [18]	73	F	Deltoid	PPV	Pain, swelling, difficulty moving arm	PSA	111	WBC count 70100 (93% PMN)	Antibiotics, arthroscopic drainage, physiotherapy	Favourable
Floyd et al. [19]	59	F	Deltoid	PPV	Pain, limited mobility, swelling, redness, fever	PSA	18	WBC count 12125 (85% PMN)	Antibiotics, arthroscopic irrigation and debridement, physiotherapy	Favourable
Barnes et al. [20]	22	F	Deltoid	Flu	Pain limiting range of motion and functional ability	SAB	–	No	–	Favourable
Cook [15]	76	M	Deltoid	Flu	Severe pain, loss of movement	SAB	–	–	–	Favourable
Okur et al. [21]	66	F	Deltoid	Flu	Pain, limited movement	SAB + tears in supraspinatus and infraspinatus tendons	–	No	None	Favourable
Okur et al. [21]	59	M	Deltoid	Flu	Pain	Minimal increased T2-weighted signal in left deltoid muscle and subcutaneous fat tissue	Normal	No	NSAIDs	Favourable
Okur et al. [21]	39	M	Deltoid	Flu	Prolonged pain	SAB, focal subcortical bone marrow oedema-like signal	Normal	No	NSAIDs	Favourable
Okur et al. [21]	36	M	Deltoid	Flu	Pain, loss of range of motion	Subcortical bone marrow oedema	Normal	No	NSAIDs	Favourable
Degreeef and Debeer [22]	73	F	Deltoid	Flu	Loss of motion	Adhesive capsulitis	–	–	Distention arthrography	Favourable
Degreeef and Debeer [22]	54	M	Deltoid	Flu	Loss of motion	Adhesive capsulitis	–	–	Distention arthrography	Favourable
Degreeef and Debeer [22]	36	F	Deltoid	Flu	Loss of motion	Adhesive capsulitis	–	–	Distention arthrography	Favourable

F, female; M, male; PPV, pneumococcal polyvalent vaccine; SAB, subacromial bursitis; PSA, pseudo-septic arthritis; WBC, white blood cell; PMN, polymorphic neutrophils; NSAIDs, non-steroidal anti-inflammatory drugs.

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