



Nonunion of fractures in children

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In fractures of children, we usually confirm patients and parents that healing is not a point of any uncertainty. No doubt that nearly all fractures in childhood will heal. Pediatric traumatologists have two main jobs: to guide healing to a finally good function and to prevent technical failures which disturb healing. A nonunion is exceptional. Exemplary Shrader et al. informed about 43 cases in 15 years in a level I trauma center [8].

In adults, a number of non-surgical factors influence fracture healing like drugs, osteoporosis, and immunosuppression [3]. Age, diabetes, arteriosclerosis, soft tissue injury, and periosteal destruction induce a stop of fracture healing [6]. In children, we have to focus much more on iatrogen factors like neglect of fracture dynamics and instability. These factors are able to disturb the natural healing process even in a child with very high regenerative bone activity and growth potential. A “fateful course” is possible but it is less often responsible than mentioned and can be attributed to open fractures and/or infection in single cases [8].

The section of pediatric traumatology of the German Society of Traumatology used one of their last internal scientific meetings to sum up individual experience with cases of nonunion in children. The members of this group are intensively involved in daily pediatric trauma care. Schmittenbecher et al. and Fernandez et al. reported about the quota of nonunion in forearm shaft fractures following ESIN osteosynthesis (1–2%) some years ago [1, 7]. Now Loose et al. collected cases with nonunion in forearm fractures in children with a conservative therapeutic approach [4]. It is important to show that especially in the forearm of children, late spontaneous healing is possible without surgical intervention because of the good blood supply and the high osteogenic activity.

Sometimes, lower leg fractures in children are very unstable. The limited soft tissue covering together with a suboptimal osteosynthesis and a too long limited weight load can end with delayed healing or nonunion. Rueden et al. focused on this fracture area and found a number of cases as a basis to discuss problems and solutions for this region [5].

The very delicate blood supply to the radial head is denounced to induce some change of shape of radial head in every case of radial neck fractures. This may be slight enlargement of the head without clinical relevance up to a rough change of the radial head ending with limitation of rotation of the forearm. Even nonunion and/or head necrosis may arise. Fernandez et al. show an unique series of such cases and introduce in an interesting modus to give them a new chance to heal [2].

Finally fractures of the radial humerus condyle are known to develop nonunion in children if they are not fixed in a stable way. On the contrary, the neighboring supracondylar fractures do not react in the same way. Sommerfeldt and Schmittenbecher analyzed their own cases and reviewed the literature on disturbed healing around the distal humerus and showed how to prevent these complications and/or how to manage them [9].

Nonunion is fortunately a rare complication in children. Nevertheless, the compact information about causes, optional prevention, management and longtime course should be of interest for the readers of European Journal of Trauma and Emergency Surgery. The section of pediatric traumatology of the German Society of Traumatology thanks the editors of EJTES for the opportunity to share their experience in this special topic with the EJTES community.

Compliance with ethical standards

Conflict of interest The author declare that they have no conflict of interest.

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