Nerve injuries are a common complication of upper extremity fractures. Especially the long arm nerves are prone to injuries. After such an injury the muscles are denervated. Fortunately, if nerves are injured but the continuity of the nerve is intact a regeneration by spreading of the axonal fibres starts early after the injury and finally a new neuromuscular connection – a neuromuscular endplate – is reestablished. Till today it is unknown whether the newly formed neuro-muscular endplate is functional equivalent to the original. During the last years a new technic became routinely available in paediatric neurology to study the neuro-muscular endplate: stimulated single-fibre-EMG. This technic allows a precise and objective assessment of the neuro-muscular connection. At our hospital we care together with our colleagues from the paediatric surgery department for children with fractures and nerve injuries. During the last years we have adopted the technique of single fibre EMG and included it into our clinical repertoire for traumatic nerve injuries.

It has been previously hypothesis that the newly formed neuromuscular endplate is not as reliable as the original one. This fact would have major clinical implications for the support and training after nerve injuries. To address this question, we have set up this pilot project to conduct routine measurements of the recovering nerve using single fibre-EMG. Our preliminary data shows, that these measurements can be reliable conducted in the pediatric population and we are now in the process of applying for ethical approval to analyse a larger cohort.

Rasmussen syndrome is a rare complication of gastro-esophageal reflux disease (GORD) when a patient presents with extraesophageal symptoms, typically neurological. Although its pathophysiology is not completely understood, one explanation is that neurological manifestations are the consequence of vagal reflex with the reflex centre in nucleus tractus solitarii. The goal of this study was to review the existing literature and describe a typical presentation and investigation of Sandifer syndrome. At our hospital we care together with our colleagues from the paediatric surgery department for children with fractures and nerve injuries.

Methods A comprehensive literature search was performed via PubMed, Cochrane Library and NHS Evidence databases. 27 cases and observational studies were identified.

Results The literature demonstrates that presenting symptoms of Sandifer’s may include any combination of abnormal movements and/or positioning of head, neck, trunk and upper limbs, seizure-like episodes, ocular symptoms, irritability, developmental and growth delay, iron-deficiency anaemia.

In terms of diagnostic procedures, 24-hour oesophageal pH monitoring was positive in all the cases of Sandifer’s where it was performed, while upper GI endoscopy ± biopsy and barium swallow were diagnostic only in a subset of cases.

A range of treatment options were applied in the reviewed literature, including dietary changes, pharmacological management, enteral tube feeding, and surgical approach. These treatment options are consistent with the 2015 NICE guidelines on management of GORD in children and young people.

Successful treatment of the underlying gastro-oesophageal reflux disease led to a complete or near-complete resolution of the neurological symptoms in all of the cases.

Discussion As Sandifer syndrome is driven by the underlying gastro-oesophageal reflux, it is not surprising that its investigations and management showed to be consistent with those of GORD. It is evident from the literature that many patients were originally misdiagnosed with various neuropsychiatric diagnoses that led to unnecessary testing and ineffective medications with significant side effects. Earlier diagnosis of Sandifer’s would have allowed to avoid them.