Chrisofix®

CHEST ORTHOSIS
FOR FRACTURED RIBS

IMMEDIATE PAIN REDUCTION ($p<0.05$)

- **Accelerated recovery of respiratory functions ($p<0.01$)**
- **Shorter hospitalisation ($p<0.001$)**
- **Reduced risk of pneumonia**
- **Breathable and waterproof**

CE

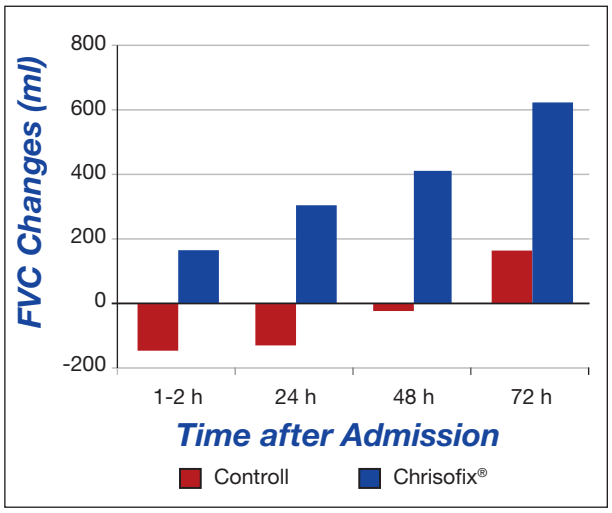
EU patent: 087 46 07

The effect of Chrisofix® Chest Orthosis in rib fracture patients

The Chrisofix Chest Orthosis® (rib splint) is an effective and easy to use device for the treatment of rib fractures. It immediately ameliorates pain and in the same time increases the forced vital capacity (FVC). It decreases the paradox thoracic movement – if such develops – and reduces the risk of late complications. The rib splint is easy to adjust and continuously secure in the requested position, comfortable to wear, hypoallergenic and X-ray transparent.

Rib fractures disrupt the static of the chest wall, decrease the respiratory area, and thus cause restrictive and later obstructive breathing difficulty with unforeseeable consequences due to the increase of bronchial excretion. The idea of the chest orthosis, the partial immobilisation of the chest has been per analogy developed to the spontaneous defence mechanism, during which the rib fracture patient tries to decrease the pain by pressing with his hand on the site of the injury.

To proof the assumed positive effect of the chest orthosis in rib fracture patients, two multi-centre clinical studies had been performed and reported at the 7th European Trauma Congress 2006 in Ljubljana and published in the Proceeding of this. (Reprints are available).



106 hospitalised patients with 1-7 fractured ribs (age between 16 and 92 years) were involved into the first placebo-controlled single-blind study (**Zsíros, L.** et al.: Easy and effective method for the treatment of rib fracture by using Chrisofix-technique; **G514C0347,** p.: 387–390). Pain level both at rest and cough-induced was assessed by visual analogue scale 1, 24, 48 and 72 hours after application of the rib splint (72 pats.) or similar a sized abdominal sponge as sham treatment for the 18 controls. In both assessment, the pain level was significantly ($p<0.05$ and 0.01, respectively) lower in the Chrisofix orthosis-treated group starting 1 hour after the admission into the study. Respiratory functional tests were conducted in 29 patients rib splint treated patients and in 12 controls. The figure attached clearly shows that improvement of the FVC became significantly ($p<0.01$) accelerated starting as early as within the first hour of the treatment.

In the second report (**Mészáros, T.,** et al.: Use of chest orthosis can significantly shorten the hospitalisation of rib fracture patients, **G514C0281,** p.: 279–282) two from each other independently performed controlled clinical studies were evaluated. In these two studies, 30 and 42 patients with 2-7 fractured ribs were evaluated, respectively. The first study included randomly selected 14 splinted and 16 control patients. The second one referred to a single-blind placebo controlled retrospective investigation on 26 Chrisofix-splinted and 16 sham-treated patients.

Chrisofix Chest Orthosis was applied on the day of trauma. Painkiller, per os administrated expectorant, and physiotherapy ("breathing in a bag") belonged to the treatment strategy in both groups. Patients without complications were dismissed if the fracture caused pain had been effectively reduced and had not caused any remarkable respiratory troubles.

Nether the two study populations, nor the controls and the Chriosfix-splinted patients show any significant difference as to the age, sex or number of the fractured ribs. The control patients get in both study the same concomitant therapy as the Chrisofix-treated ones. Compared to the controls, significant difference ($p<0.05$) was registered in both studies as to the duration of hospitalisation (6.75 vs.4.21 and 6.9 vs.4.8 daxs, respectively). According to the metaanalysis including both study populations, **the Chrisofix Chest Orthosis®-treated patients spend in average 2.2 days less in the hospital, than the controls** ($p=0.0004$). Considering the price of Chrisofix Chest Orthosis®, the use of medical device is highly cost effective.

The Chrisofix Chest Orthosis® (rib splint) is available in two different sizes:

small	(17 × 12 cm)	Art. Nr. 604 (126 101)
large	(17 × 17 cm)	Art. Nr. 608 (126 101)

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