

The treatment of young children with heel injuries after implementation of a clinical pathway using a HydroBalance dressing

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Introduction:

In the Netherlands parents use their bicycles as a mode of transportation for their toddlers. Accidents happen frequently (4400 cases/year (on average 12/day) when spokes cause among others very painful heel flap injuries, which often become infected. (1) Thirty percent of these injuries are complicated by bone fractures. (1) A Clinical Pathway (CP) was developed and implemented for the treatment of young children with heel injuries to improve treatment outcomes. Fig.1. Previously conventional dressings and Moist Wound Healing dressings (MWH) were used. Although most of the injuries heal, dressing changes caused a lot of anxiety and distress for both the children and their parents.

Materials and methods:

For the study cleansing was done with a 1.5% chlorhexidine and 15% cetrimide solution **
A HydroBalance* + PHMB dressing was applied, covered with a pad and fixed with a retention bandage. The dressing evaluated in this study is a biosynthetic cellulose dressing, which has the ability to both donate and absorb moisture. (2) The dressing was to demonstrate enablement of faster healing and cause less pain than standard care (3-5).

The primary dressing was left in place until epithelialization. A cork splint is used to prevent pes equinus and to let the ankle joint rest.

The CP and products* were tested by using case ascertainment. During visits, the peri-wound skin is inspected and when required, the dressing is cut to fit the wound size. At the start of the study patients from the center were examined to determine general condition, associated factors, wound stage, and pain status. Wound inspection was every three days for 14 days. During visits the reduction in wound size, wound bed status, epithelialization, pain during dressing changes and occurrence of an infection, were evaluated.

N=20 young children (mean age was 5.69 years old (SD 1.33) that suffered from bicycle spoke accidents were recruited to the clinical evaluation. Examination was performed, upon initial and at 3 days intervals for 14 days. The patients were then followed up until wound closure.

Results :

A total of 20 children were included in the analysis (11 male and 9 female). The mean wound size at the start of the treatment was 8.60 cm² (SD 6.57). Three patients had multiple wounds (n=2 had 2 wounds and n=1 had 3 small wounds, very close together). The mean time to complete wound closure was 12.95 days (SD 7.69) with a total of visits of 4.70 (mean) (SD 1.56). Pain was assessed using a 10 point visual analog scale (VAS) adapted for children. Upon the start of the study mean pain score was 9.55 (VAS) (SD 0.69) and at the end this was 0.15 (VAS) (SD 0.37). The children and the parents were informed that the dressing would stay in place until it came off by itself, as the wound had epithelialized. At the second visit (after three days) n=17/20 reported to be free of pain. The parents reported to observe no anxiety or stress in their children for hospital visits, as they ensured that the dressing would stay in place. After three days the splint was removed and the children were allowed to walk. For details see table 1 and figure 2 and 3.

Conclusion :

There were no infections noted. The children were less anxious as during the clinic visits they did not experience pain. Wound healing was fast and child and parent friendly. The treatment was effective, reducing dressing changes and number of visits. The clinical pathway is now implemented in the hospital. Finally: Have appropriate spoke-guards installed not dress guards when ferrying kids about.

Patient number	Male =1 female =2	Age (years)	Wound size start cm ²	Time to healing (days)	Total visits	Pain at the start	Pain at the end
1	1	8	15	28	7	10	0
2	1	5.50	2 wounds: 6 & 3	8	4	10	0
3	2	6	12	18	6	9	0
4	2	6.10	4	6	3	8	0
5	2	6	8	11	5	10	0
6	2	6.10	12	18	7	9	0
7	1	2.10	2 wounds: 2 & 1	4	3	10	1
8	2	5.40	28	21	4	10	0
9	2	6.30	6	13	5	10	0
10	1	5.90	15	28	8	10	0
11	2	7	15	17	5	10	1
12	1	5	5	3	3	9	1
13	2	6.90	6	9	5	9	0
14	2	6	10	15	5	9	0
15	1	5.90	15	14	5	8	0
16	1	7	7	15	6	10	0
17	1	4.70	2	2	2	10	0
18	1	4.90	6	18	4	10	0
19	1	6	3 wounds: 1, 1, 1	5	4	10	0
20	1	3	2	6	3	10	0
	Male = 11 Female = 9	5.69 (mean) SD 1.33	8.6 (mean) SD 6.57	12.95 (mean) SD 7.69	4.70 (mean) SD 1.56	9.55 (mean) SD 0.69	0.15 (mean) SD 0.37

Table 1: Patient details

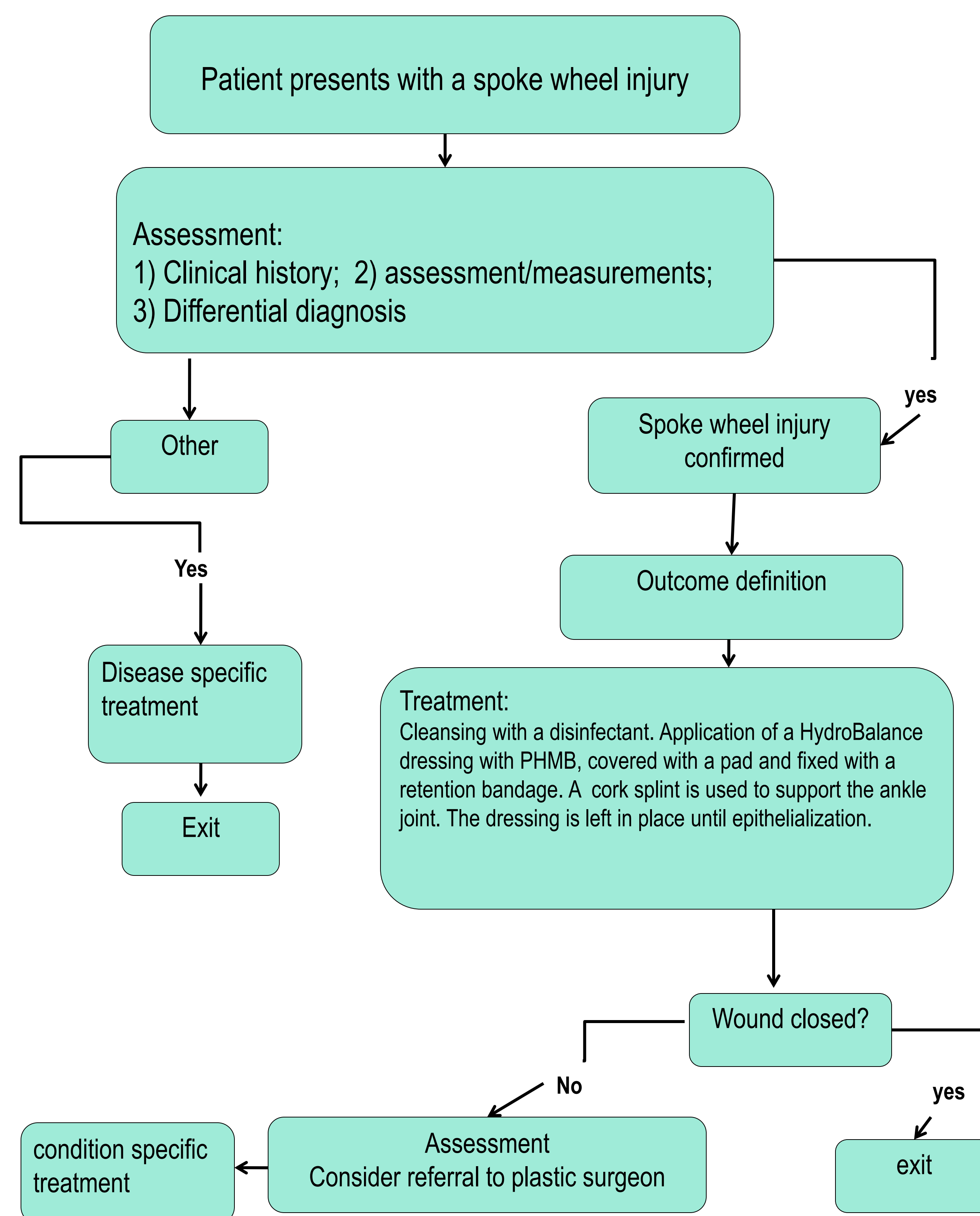


Fig 1: Clinical pathway for children with heel injuries



Fig 2:

A typical case showing the situation post injury. The 5 year– old girl was injured while sitting on the bicycle with her mother. Wound size was 28 cm², VAS 10. She was very upset and her mother was crying with her. After wound cleansing the HydroBalance + PHMB dressing was applied. After dressing application she and her mother calmed down.



Fig 3:

Situation after 6 days of treatment. The patient reported no pain and was walking. Time to healing was 21 days and a total of 4 visits. During the Visits she did not show anxiety as she understood the doctor was only inspecting her heel and not removing the dressing.

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*Suprasorb® X + PHMB : Lohmann & Rauscher GmbH, Rengsdorf, Germany
*** Hibicet®: Mölnlycke

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