

## Health-related quality of life in patients with adolescent idiopathic scoliosis after treatment: short-term effects after brace or surgical treatment, a comment

I. Aprile · A. E. Ruggeri · F. Savi Scarponi ·  
S. Illiano · M. Foschini · G. Vergili ·  
G. Frasca · L. Padua

Received: 17 April 2007 / Accepted: 6 July 2007 / Published online: 1 August 2007  
© Springer-Verlag 2007

We have read with great interest the article published by Bunge EM and colleagues [1] about short-term effects regarding health-related quality of life (HRQoL) in patients affected by adolescent idiopathic scoliosis (AIS) after a brace or surgical treatment.

Recently, we performed a similar study about long-term effects on HRQoL in surgically or conservatively treated patients affected by scoliosis between 45°–60° Cobb and we believe we can provide a further contribution to this important topic.

We have reviewed 840 clinical histories of patients treated for scoliosis (between 45°–60° Cobb) from 1975 to 1985 at the Fondazione Don C. Gnocchi (Rome). Of the initial population (840 patients), 98 showed a scoliosis with 45°–60° Cobb, 13 out of these 98 refused to participate in this study, 64 were untraceable, and the remaining 21 patients agreed to participate in this study giving their informed consent. Ten patients were surgically treated (SURG) and 11 received a conservative treatment (CONS). In terms of gender, 20 of the patients were women and 1 was man; and the mean age at follow-up was  $36.7 \pm 4.7$  years (range 20–31 years).

The conservative treatment consisted of the use of: plaster cast in one patient; plaster cast and Lyonnais in three patients; plaster cast, Lyonnais and Milwaukee brace in five; plaster cast and Milwaukee in one; Lyonnais in two patients; Milwaukee brace in one; and all treatments presented in eight patients. All the patients were instructed to wear their braces for about 20 h per day. In addition, all CONS patients underwent a rehabilitation program based on a postural re-education method. Wearing over was initiated when the patient's curve had not progressed on two successive visits and the patient was judged skeletally mature. The brace period was mean 5.2 years (range  $\pm 3.4$ ).

With regard to SURG cases, after surgery, all patients wore a plaster brace and performed a rehabilitation program based on a postural re-educational method.

Note that, the surgical treatment was always indicated in patients with a documented progression (Cobb angle between 45° and 60°) and expected remaining skeletal growth. Our 11 CONS patients had refused the surgical treatment and they chose the conservative management.

At follow-up each patient underwent a multidimensional protocol including an anamnestic evaluation (school abandonment, current employment, sport practices, occurrence of pregnancy, menarche and abortions, cervicalgia and headache) physical examination (rib-hump measuring, sagittal and coronal alignment), radiological evaluation (using the Cobb technique), disability evaluation (Barthel Index and Deambulation Index), HRQoL and back pain evaluation (the Short Form-36 Health Survey [SF-36], NASS scale, Backill Scale and Visual Analogue Scale).

As expected, comparing the two groups, we have observed: (1) an higher brace period in CONS group ( $P = 0.005$ ); (2) a more severe pre-therapy scoliosis degree in SURG group (mean value 59.2° in SURG group versus 50.4° in CONS group,  $P = 0.005$ ) and (3) a more severe

---

An author's reply on this paper is available at  
<http://dx.doi.org/10.1007/s00586-007-0462-3>.

---

I. Aprile (✉) · A. E. Ruggeri · F. Savi Scarponi · S. Illiano ·  
G. Frasca · L. Padua  
Fondazione Don Carlo Gnocchi,  
Via Maresciallo Caviglia, 30, 00194 Rome, Italy  
e-mail: iaprile@dongnocchi.it

M. Foschini · G. Vergili · L. Padua  
Department of Neurology,  
Università Cattolica, Rome, Italy

**Table 1** Mean, SD and statistical results of disability and patient-oriented measures recorded in the CONS and SURG groups

Measures	CONS (mean $\pm$ SD)	SURG (mean $\pm$ SD)	<i>P</i> level
<b>Disability</b>			
Barthel index	100 $\pm$ 0	100 $\pm$ 0	NS
Deambulation index	7 $\pm$ 0	7 $\pm$ 0	NS
<b>Pain</b>			
BACKILL scale	33.7 $\pm$ 3.4	30.2 $\pm$ 13.3	NS
Visual analogue scale	6.9 $\pm$ 1.9	5.2 $\pm$ 4.0	NS
<b>HRQoL</b>			
SF-36 physical functioning	79.5 $\pm$ 11.5	80 $\pm$ 24.9	NS
SF-36 role physical	77.3 $\pm$ 30.5	67.5 $\pm$ 47.2	NS
SF-36 bodily pain	48.7 $\pm$ 23.3	57.9 $\pm$ 28.1	NS
SF-36 general health	61.5 $\pm$ 17.5	67.5 $\pm$ 24.3	NS
SF-36 vitality	58.6 $\pm$ 18.5	64.0 $\pm$ 13.7	NS
SF-36 social functioning	76.4 $\pm$ 20.5	66.3 $\pm$ 27.6	NS
SF-36 role emotional	84.8 $\pm$ 34.6	54.6 $\pm$ 45.6	NS
SF-36 mental health	69.1 $\pm$ 24.8	64.7 $\pm$ 14.5	NS
SF-36 physical composite score	44.8 $\pm$ 7.3	47.2 $\pm$ 12.7	NS
SF-36 mental composite score	50.4 $\pm$ 9.0	50.0 $\pm$ 18.7	NS
<b>NASS</b>			
Symptom	89.6 $\pm$ 10.5	80.0 $\pm$ 27.1	NS
Pain/disability	81.7 $\pm$ 12.7	83.7 $\pm$ 13.7	NS

NS No statistical significantly

post-therapy scoliosis degree in CONS group (mean value: 54.4° in CONS group versus 37.5° in SURG group,  $P = 0.005$ ). Moreover, we recorded an higher school abandonment in SURG group ( $P = 0.04$ ) since the global treatment duration (about 25 years ago) resulted to be longer in SURG group.

Regarding HRQoL, disability and pain, the comparison of the two groups at follow-up did not show statistical differences. Table 1 shows mean, SD and statistical results of disability and patient-oriented measures recorded in the two groups.

With respect to the Bunge's study we have reported a long-term follow-up. We have studied HRQoL aspects using the SF-36 showing significant correlation with the Scoliosis Research Society-22 Patient Questionnaire [2], adopted by Bunge in his study. Bunge and colleagues enrolled a larger sample of patients including also patients with scoliosis lower of 45° Cobb, and they divided their surgery patients into two subgroups: brace before surgery and only surgery (not possible in our for small sample).

Our study, even if on a little sample, focuses the attention on patients with 45–60 Cobb degree. As Bunge observed in short-term follow-up, we did not found in long-term follow-up any significant differences in disability, HRQoL and pain in patients undergoing conservative or surgical treatment. In scoliosis patients, the curve between 40° and 50° is a issue still discussed during the therapy decision (bracing or surgery) and Bunge's and our results can not support the preference of surgical treatment above the conservative treatment and viceversa.

## References

1. Bunge EM, Juttman RE, de Kleuver M, van Biezen FC, de Koning HJ; NESCI group (2007) Health-related quality of life in patients with adolescent idiopathic scoliosis after treatment: short-term effects after brace or surgical treatment. *Eur Spine J* 16:83–9
2. Lai SM, Asher M, Burton D (2006) Estimating SRS-22 quality of life measures with SF-36: application in idiopathic scoliosis. *Spine* 31:473–8