British Scoliosis Society (BSS)

Standards of Care for Bracing in Adolescent Idiopathic Scoliosis (AIS)

1. Aims

This document gives guidelines to spinal surgeons, orthotists and NHS providers for delivering care to patients with adolescent idiopathic scoliosis who may benefit from brace treatment. Bracing hopes to reduce the risk of curve progression in Adolescent Idiopathic Scoliosis (AIS) and avoid surgery.

2. Who

All patients with AIS with curves 20-40 degrees, Risser 0-2 (significant growth potential) and apex below T7 should be offered brace treatment. The evidence from the BrAIST Study shows that 72% of braced patients avoid curve progression to 50 degrees (a surrogate marker of surgery) whilst only 48% of non-braced patients avoid surgery (1). There is no scientific evidence to support bracing outside these parameters.

3. Management in Primary Care

The US Preventive Services Task Force were satisfied with the evidence supporting the benefit of bracing in AIS patients. However, they found inadequate evidence to show that reducing spinal curvature in adolescents would improve long-term health outcomes as an adult. They also found inadequate evidence regarding the harms of treatment. They concluded 'that the current evidence is insufficient to assess the balance of benefits and harms of screening for adolescent idiopathic scoliosis in children and adolescents aged 10 to 18 years (2). The benefits of potentially reducing the number of patients requiring surgery was not considered. The BSS supports:

1. All patients who may benefit from bracing should be given the opportunity to be braced as early as possible without overtreatment (no bracing in curves less than 20 degrees where progression risk is lower).

2. GP and First Contact Practitioner (FCP) education on clinical detection of scoliosis.
3. Raised public awareness of scoliosis.

4. Management in Secondary Care

1. Delays from primary care referral to first clinic appointment must be minimised to reduce the chance of curve progression beyond that suitable for bracing resulting in surgery being the only option. Suggestions include:
    a. Initial outpatient x-ray to prioritise those with curves suitable for bracing.
    b. Extended Scope Specialist Nurses and Physiotherapists to see these patients initially in clinic and refer suitable patients for bracing.
2. The waiting time from the spinal team making a bracing referral to the brace fitting should be no longer than 8 weeks.
3. In-brace PA spinal radiograph either on the day of brace fitting or ideally 2-6 weeks later to assess reduction in brace and allow brace adjustment. This is the best method to assess brace 'quality' accepting that it will also be dependent on curve flexibility. This is also predictive of bracing success (3–9).
4. Out-of-brace PA spinal radiographs should be performed every 6 months to assess curve progression. These are used to predict bracing success (10,11). Patients should be advised to remove the brace 2-4 hours before the radiograph but must bring the brace with them if they are seeing the clinical team. Radiographs should include T1 to sacrum and the iliac crests to assess Risser stage. Patients should be positioned looking straight ahead with arms by their side. All radiographs should have any leg length discrepancy corrected especially if it is large enough for the patient to wear a shoe raise. If a lateral radiograph is required, the arms should be positioned with 'knuckles on clavicles' or 'hands on cheeks' (12–16).
5. Using left hand and wrist radiographs should be assessed for skeletal maturity using Sanders' stage (17) and/or the Distal Radius and Ulna classification (18–22) and/or Tanner-Whitehouse 3 bone age in conjunctions with Risser stage to assess skeletal maturity. These are especially valuable:
    a. In those patients at the borderline for bracing (Risser 2) to avoid overtreatment and inform shared decision making.

b. To determine the optimal time for brace cessation (Risser 4 and Sanders 7 in girls; Risser 5 and Sanders 7 in boys)

6. Standing height and ideally sitting height should be recorded at each visit (23).
7. Patients should be encouraged to wear a full-time brace 20 hours per day as success is related to adherence (1,24,25).
8. The potential psychological problems from bracing should be considered (26,27) although there are no recognised screening tools. Establishing local links to a Paediatric Clinical Psychologist is recommended (28).
9. Patients and parents should be given information regarding bracing (see BSS bracing information). This should include information about wearing the brace and advice for schools.

5. For consideration:

10. There is no current evidence that one type of rigid spinal brace is any better than another although soft braces are probably less effective (29).
11. Brace compliance (adherence) could be monitored with an electronic sensor (23) to recognise non-adherence and try to address any psychological issues to optimise compliance to a level where bracing may be effective or to agree to discontinue bracing if wear time is not adequate enough for benefit.
12. All centres should ideally be recruiting to the NIHR HTA Bracing Adolescent Idiopathic Scoliosis (BASIS) study comparing full-time bracing versus night-time bracing in AIS.

6. References

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