

Creative Ideas for Health and Comfort



Symmetrikit and Positive Positioning Case study

Introduction

The aim of the case study was to see if objective measurements showed a difference in the body symmetry of an adult with complex needs when a sleep system had been introduced and used for around a year.

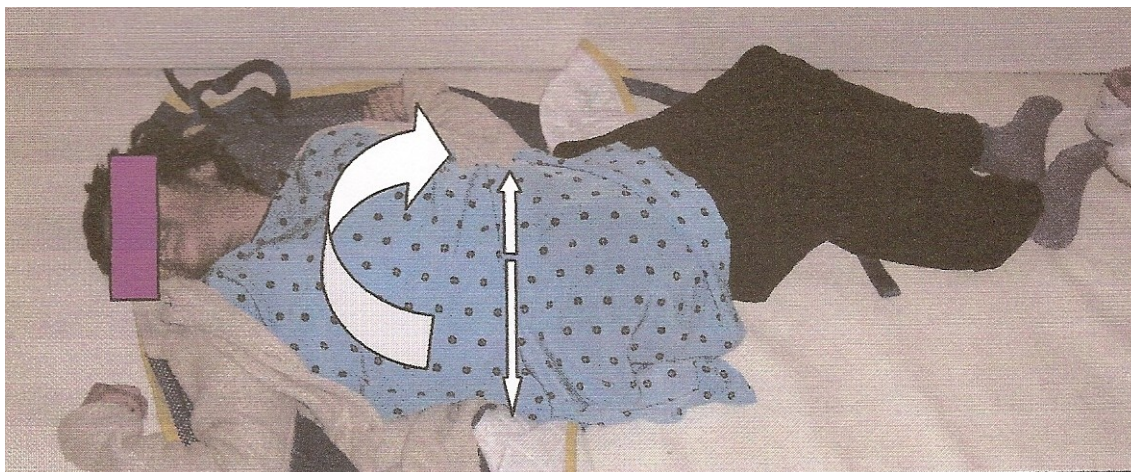
Miss S was chosen as she has regular carers who could be trained in the use of the equipment and they were willing to participate.

The only change in Miss S's treatment in this time was the introduction of the Symmetrisleep system.

All measurements taken in this case study were taken using standardised measuring equipment. The equipment measures the full width and depth of the chest at xiphisternum level and measures the xiphisternum to rib angle on left and right for rotational changes. The measurements are taken three times on each occasion to increase the inter-rater reliability; the mean of the three is taken and used to compare with future measurements. The ASIS to bottom rib were measured using a tape measure and anatomical marks on the skin. These were also measured three times and a mean measure used.

Born in 1982 – aged 27 at start of study
Diagnosis Cerebral Palsy from birth
Dislocated right hip
Gastro-oesophageal reflux
Frequent chest infections

Physical description



The arrows on the picture above represent the rotation present in Miss S's rib cage.

Supine lying

- Head in line with her thorax and turns to the left and appears side flexed to the left
- Chest extended and rotated to the left
- Sternum not central over her spine making her chest wider on the right than the left
Scoliosis concave on the left
- Shoulders higher on the right than the left
- Shoulders external rotation and abduction
- Elbows flexed
- Forearms supinated
- Wrists flexed
- Fingers flexed
- Head – can turn to either side
- Pelvis rotated back on the right side
- Pelvis oblique higher on the left
- Hips windsweep to the left,
- right hip adducted, internally rotated
- left hip abducted, externally rotated
- knees remain in flexion
- ankles roughly plantar grade – right may be slightly plantarflexed
- feet
- right foot supinated
- left foot pronated

Rationale for using a sleep system

If her body shape is not protected then Miss S is at risk of

- Increasing swallowing problems
- Increased frequency of chest infections
- Increased reflux as her diaphragm is in an unusual position putting pressure on her stomach and pushing its contents upwards
- Continued constipation due to poor gut motility
- Musculoskeletal pain due to unusual stresses and strains though soft tissues and joints, right hip already dislocated

Long term

- Poor nutritional status due to difficulties swallowing and digesting
- Decreased food intake due to effort of eating increasing
- Poor ability to communicate as increasingly difficult to lift her head
- Difficulty in seating Miss S comfortably – affecting her ability to access the local community
- Increased burden of care on carers.

Miss S's body shape has already changed and it is obligatory, she cannot move and change her position.

Miss S has some active movement through abnormal patterns and when she relaxes / falls asleep she goes back to the position described above.

Miss S spends up to 10 hours a day in bed in the position described above.

In sleep muscle tone drops and gravity is thought to have a greater effect.

Miss S was assessed in a Symmetrisleep system for 45 mins on 23/11/09 and her muscle tone dropped when supported in the system. She reported feeling comfortable when asked. On assessment Dad reported he had not seen Miss S this relaxed or straight for many years. Whilst supported Miss S did move her legs and bring her knees – mainly her right leg, to her chest but when she relaxed they were guided back into the improved position.



Equipment acquisition

There is no provision for sleep systems in the area where Miss S lives. A case was put together and sent to the PCT commissioners but was turned down.

An application was made to a charity previously used in the area. The charity had been forced to close its local operation due to financial constraints.

The sleep system was then provided by Symmetrikit as Miss S and her family agreed to be a study case.

Symmetrisleep was delivered to physio on 26/01/2010

28/01/2010

Demonstrated to Miss S's sister how to put the components of the symmetrisleep system on the bed and how to support Miss S correctly and then observed as she used the system.

29/01/2010

Telephone call to Dad and asked how Miss S was overnight. He reported that she had slept all night supported and seemed less stiff in the morning.

16/02/2010

Called Dad he said they couldn't remember how to use the supports correctly and would like some assistance. Appointment arranged.

25/02/2010

Visited the house but family very stressed looking after other children and not able to concentrate on sleep system. Booklet of instructions made.

06/04/2010 measurements taken

Mean chest depth 111mm

Mean Chest width 267mm

Depth width ratio 0.416 (0.65 – 0.85 is normal range lower number means flatter chest)

This indicates that Miss S has a flatter chest and that gravity has caused her to become flatter.

Mean right side 162mm

Mean left side 105mm

Right / left ration 1.54

Rotated towards left side

ASIS to bottom rib

Right 110mm

Left 48mm - can be corrected manually to 75mm but will not stay there without support

Difficulties encountered

Language – English is not the family's first language and Mum does not speak English. Translation done by daughter, daughter-in-law or Dad.

Difficulties contacting the family had phone number for Dad but he often didn't return voicemails left. Three month gap in visits due to communication difficulties.

Visit 22/07/10 Miss S has PA's (personal assistants) who put her to bed in the evenings. PA's unaware of symmetrisleep sleep system and not using it. Showed PA the pictures of the sleep system in use and Miss S got very excited by seeing the pictures. This was interpreted by the family and the PA as her wanting to use it.

Telephone call to the agency supplying the PA staff to arrange training for all people to work with Miss S.

Created instructions in the use of the sleep system.

29/07/10 practical instruction for 2 PA's in the placing of the supports with them putting the supports around Miss S on her bed. Explained about checking her skin and comfort. Gave PA's a paediatric Pain profile to complete one a week.



Further problems in contacting the family next seen in Jan 2011

27/01/11

Miss S been in hospital with a chest infection around Christmas time and now has a red area on her sacrum on the left side. District nurses attending to the pressure area. Has not been using the sleep system when unwell.

PA placed the sleep system supports on the bed. There does not seem to be a correlation between the sleep supports and the pressure area.

Saw the PA's frequently in Jan and feb 2011 to ensure correct use of symmetrisleep sleep system.

Measurements 06/06/11



Mean chest depth 158mm
Mean Chest width 300mm

Depth width ratio 0.53 (0.65 – 0.85 normal values lower number means flatter chest)

This indicates that Miss S has a flatter chest and that gravity has caused her to become flatter.

Mean right side 156.25mm
Mean left side 139.58mm

Right / left ration 1.12
Rotated towards left side

ASIS to bottom rib

Right 90mm

Left 70mm - almost fully correctable but needs support to remain there.

Table to show changes in measurements

	06/04/10	06/06/11	
Chest depth	111	158	
Chest width	267	300	
Depth width ratio	0.416	0.53	Near normal value so correction is taking place
Right side	162	156	
Left side	105	139	
Right left ratio	1.54	1.12	Nearer normal value so correction is taking place
ASIS to rib right	110	90	
ASIS to rib left	48	70	

There will be a margin of intra-rater error but using three measurements of each parameter and using the mean of these for the ratios eliminates some of this.



Conclusion

Miss S, a 28 year old young lady with cerebral palsy, had a symmetrisleep system introduced into her management. This was used most nights at home but was not used in respite or hospital. In the 19 months of this study Miss S's body shape started to become more symmetrical and this difference was measureable. Anecdotally there was a difference in her pain in the mornings when she was assisted to get washed and dressed as her dislocated right hip did not cause so much pain or discomfort. It was also evident that Miss S was sleeping better, she was reported by staff at her day service not to be falling asleep in the mornings as she used to.

The many secondary problems Miss S was at risk of are greatly reduced if her body shape is nearer symmetrical and her internal organs in more correct anatomical positions relative to each other.

This case study adds to the weight of evidence that the position adopted at night has a significant effect of the day time position.

Case study carried out by Physiotherapist Gill Arnett BSc(Hons) MSc MCSP HCP registered member of the National Back Exchange.