An overview of the Oral Motor Function Therapy Clinic in the Special Care Unit in Westmead Hospital, Australia

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Abstract
Oral Motor Function Disorder (OMFD), such as feeding problems, occurs frequently in children with neurological impairment. Common parental complaints include: poor sucking, difficulty in breastfeeding, problems with the introduction of solid foods, difficulty in drinking liquids, difficulty in biting or chewing solids, and coughing and choking with meals. OMFD is a major factor in the pathogenesis of under nutrition and usually correlates with the severity of motor impairment. Children with more severe impairment who are unable to lift their heads or feed themselves have a higher risk of aspiration. The Oral Motor Function Therapy (OMFT) clinic in Special Care Unit in Westmead Centre for Oral Health looks after children with disabilities who have problems with drooling, eating and drinking. OMFT includes many home based exercises involving the carers and the children. This paper gives an overview of the running of the OMFT clinic, including the aim of the clinic, method of assessment, diagnostic criteria, different OMFT and treatment approach.

Keywords: Oral motor function therapy, drooling, dysphagia

Introduction
Feeding and swallowing disorders in children with disability have significant implications for development, nutrition (Troughton and Hill, 2001), gastrointestinal function, parent-child interaction and overall quality of life. (Reilly et al., 1996, Hogan, 2004) Oral motor function influences the normal growth and development of oral structures, occlusion and salivary control. Oral motor skills are important for basic survival, such as sucking and swallowing, speech development, growth and development of dental structures (Motion et al., 2002). There are many signs and symptoms of oral motor function disorders. At rest, open mouth posture, tongue thrusting forward (Figure 1), excessive drooling and teeth grinding may be observed. There may also be poor articulation or poor speech intelligibility. On feeding, one may find tactile defensiveness (oral hypersensitivity) or poor sensory awareness (hyposensitivity); biting on fork/spoon/straw when eating or drinking; inability to hold food in the mouth due to poor lip control, dropping or propelling food out when eating (Figure 2). On the other hand, difficulty in tongue movement, food pooling in cheeks (Figure 3), pushing too much food into the mouth, gagging, choking or aspiration may be observed. (Gisel et al., 2003; Yilmaz et al., 2004).

The development of feeding skills is pivotal in day-to-day interaction and bonding between a parent and a child. (Sayre et al., 2001) This is closely related to the motor, cognitive and psychosocial development of children and is all the more important in children who have intellectual and physical disabilities, such as Cerebral Palsy and Down syndrome. These children often present with heightened tactile defensiveness and a general distrust of the clinical environment due to recurrent hospitalisations, long-term tube feeding and invasive medical procedures. As a consequence complaints such as drooling and difficulties in swallowing are common. Previously, management strategies were pharmacological or surgical (Crysdale et al., 2001). This approach led to the start of an Oral Motor Function Clinic in the Special Care Unit in the Westmead Centre for Oral Health. The Westmead Centre for Oral Health (then known
as the Westmead Hospital Dental Clinical School) was opened in 1981 and is the provider of general dental services to the eligible population of Sydney West Area Health Service region. It is also a provider of state-wide specialist dental services for New South Wales (NSW). Moreover, the Centre for Oral Health is a teaching hospital that provides education for dental professionals and undertakes oral health related research. It currently has 170 chairs with facilities to expand to 230 chairs. It is located in a three storey block, with advanced patient care facilities and operating suites. The Institute of Dental Research (IDR) is also located within the Centre. The level of supporting services makes this an outstanding health complex.

Aim of The Oral Motor Function Therapy (OMFT) Clinic

The aim of the OMFT clinic is to provide early intervention for children with a disability under the age of 10 years with drooling and feeding problems. Specialised treatment modalities are employed to improve sensory awareness, elicit muscle movement, lip closure and improve feeding techniques.

The Oral Motor Function Therapy (OMFT) team

The OMFT clinic comprises a professional team of:
- Speech pathologist
- Paediatric dentist
- Special care dentist
- Dietician
- Regular therapist (Occupational therapist, Physiotherapist); and
- Others as indicated by the needs of the individual (for example, carer giver, parent, teacher, nurse, paediatrician).

Referral and Assessment

A standardised referral form is sent out to all referring clinicians. (Appendix A) and a protocol is followed to assess the patient (Mugayar et al., 2005):
- Parent Questionnaire (Appendix B), detailing relevant problems, for example, drooling or feeding problems, food and utensils used, foods normally eaten by the child, any specialised utensils in use. In addition
- Detailed medical history
- Birth history
- Medications
- Operations
- Diagnosis/syndromes
- Clinical oral examination
- Dentition
- Caries status: caries and infections can make dribbling worse
- Gingival health
- Saliva
- Malocclusion: Angle’s class 2 division II, class 3, anterior open bite, overjet
Breathing assessment; Checked using a graduated mirror. *(Figure 4)* If nose blockages cause mouth breathing, patients will be referred for ear, nose and throat specialist assessment

- Meal Observation Test:
  - Posture of the child whilst eating
  - Textures of food
  - Drinking- cup/bottle, thickened, adequate fluid intake

Video recording and Photographs

Written consent sought from the parents

- Qualitative Assessment tool (at rest/eating/swallowing)
  - Lip Function
  - Lip Position
  - Tongue Function *(Figure 5)*
  - Tongue Position
  - Jaw Function
  - Cheek Function *(Figure 6)*
  - Drooling
  - Oral Hypersensitivity
  - Swallowing

- Postural Assessment
  - Positions of the head, how the patient sits in the wheelchair or feeding chair
Therapy and treatment
Parents and primary care-givers are actively engaged in the treatment process; they are advised of the lengthy duration of therapy as well as the necessary home-based exercises that will be their responsibility. All home based exercises are to be carried out at regular meal times without placing any additional onus on the primary care-giver. Positive reinforcement techniques, such as awarding stickers, play an important role in encouraging cooperation and motivation. The primary care-givers’ cooperation is vital and they are requested to fill in the home care booklet to track the progress of the treatment. (Appendix C).

Oral motor function therapy includes:

- Desensitisation (Figure 7)
  Hypersensitivity may be triggered by overstimulation and understimulation. Elimination of hypersensitivity by desensitisation around the lips and cheeks can improve eating

- Posture - patients are assessed on their head positions while feeding. Forward leaning positions may contribute to drooling

- Vangede Method (Serafin, 2005): the method involves stimulation of muscles in and around the mouth to improve sucking, swallowing and chewing patterns. Vangede exercises may be given as: 1. Passive stimulation; 2. Controlled active stimulation; 3. Active stimulation and 4. Resistance exercises.

- Feeding Techniques and Feeding Utensils. The spoons, (Figure 8) designed by Mukai at Showa University, Tokyo, have a flat bowl for easy removal of food without the need for scraping the upper incisors. For the self-feeding spoon (Figure 9), an area has been moulded from the handle to the bowl as a barrier to prevent placing the spoon too far into the mouth, thus promoting more effective swallowing and chewing skills. (Serafin, 2005)

- Oral Plates: palatal plates are used as a training device with oral motor function therapy. They promote jaw stability, lip closure, improved tongue position and swallowing. (Carlsted et al., 2003) Several factors determine the suitability of palatal plates in OMFT. The plates must be thin to allow maximum space for the tongue. The patient must be free of oral disease. As the plates need to be changed as growth occurs consideration needs to be given to their use if a general anaesthetic would be required for their fabrication. This usually happens in older children with disability. ‘Active stimuli’ plates are used for active conscious training. They can be used for longer periods of time. Often bars with ‘sliders’ to be moved along them by the tongue, are incorporated. (Figure 12).

Team assessment
The choice of which type or types of oral motor function therapies and/or the of oral plates is determined by the full team, that is, the speech pathologist, the paediatric dentist, the special care dentist, the dietician, etc. The treatment plan is carefully devised after discussion by this multidisciplinary team in consideration of the social and family situations of the patients. Successful intervention is dependent on the correct therapy applied in the appropriate time frame for the patient.

Figure 7
Desensitisation with gentle firm touch of 20-30 seconds in and around the lips

Figure 8
Specially designed spoons: the two white spoons are made of silicone and therefore soft and the shapes are designed for ease of feeding liquids; the stainless steel spoon is shallower to prevent overloading of food and is designed for solid food feeding

Figure 9
Modification of self-feeding spoon. The acrylic curtain on the neck of the spoon prevents the placement the spoon too far inside the mouth which causes gagging.
Discussion

A search through the dental literature since the 1960s, in the English-speaking world, yields some research articles and case studies on different ways to treat, patients with different diagnoses and with varying severity but none has been able to show that one therapy is superior to another, nor even that any one therapy is effective comparing it with a control population. This lack of evidence available in relation to the efficacy of oral motor function therapy can be attributed to the complexity of the cause of the oral motor function disorders and the varying degrees of severity and complexity in the diagnosis of each patient. As well, a multiplicity of treatment approaches both singly and in combination coupled with small sample sizes make comparisons difficult. Similar conclusion has been drawn in a recent review article on this subject. (Van der Burg et al., 2007) The article’s authors pointed out that the evidence base data in the literature reviewed are weak. They further concluded that:

“Because behavioural interventions are complex and demanding, it is difficult to include a large number of participants when conducting such studies in daily clinical practice…conclusions about efficacy of behaviour therapy for drooling and/or best practice cannot be drawn yet, although our analysis suggests that this approach is promising.”

The question remains in the minds of the ‘unconverted’, ‘Should we try to help this diverse group of patients with oral motor function therapies while there are indications but not proof of these therapies’ effectiveness?’

Currently, the OMFT clinic in Westmead is conducting research on the qualitative experience of the carers of children with oral motor function disorders. It is based on the assumption that among many other factors, the main carers of these children contribute substantially to the improvement in the oral motor functions of the children, and how the carers feel about the treatment will affect the outcome.

Conclusion

The implementation of the oral motor function therapies in the Special Care Unit in Westmead Centre for Oral Health has been shown to be an effective modality of treatment for this diverse group of young patients. It is hoped that this article will generate interest, discussion, debate, and more importantly, research ideas, in aid of better and more effective treatment of such disorders.

Acknowledgement

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References


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Appendix A

ORAL HEALTH SERVICES
WESTMEAD CENTRE FOR ORAL HEALTH

REFERRAL FORM FOR THE ORAL MOTOR FUNCTIONAL THERAPY (OMFT) CLINIC

Patient Details:
Name: __________________________________________________________
Date of Birth: ________________________________________________
Address: ______________________________________________________

Telephone: home: __________________ work: ___________________ mob: __________________

Medicare Number: (referral cannot be processed without this)____________________________________________________
Parent/Caregivers Names: ______________________________________________________________________________________

Reason for Referral: __________________________________________________________________________________________

Background Information:
Medical diagnosis (including disabilities): _________________________________

Medications: ______________________________________________________

Professionals Involved: _____________________________________________

Oral Hygiene (i.e. frequency of tooth brushing, use of toothpaste): ______________________________________________________________________________________________

Dental Treatment to Date: ______________________________________________________________________________________

Therapy to Date (e.g. Speech Pathology, Occupational Therapy, Physiotherapy): ____________________________________________

Oral Skills (e.g. eating, swallowing, drooling): __________________________

Communication Skills: ____________________________________________

Mobility: ________________________________________________________

Referrer’s Name: __________________________ Position: ______________
Contact Number: __________________________ Email: _________________
Date of Referral: __________________________ Postal Address: ______________

Presently there is a demand for this service and waiting times apply. You will be contacted by letter or phone when an appointment is available.

Please fax this form to Westmead Centre for Oral Health, Oromotor Functional Therapy Clinic, Special Care Dentistry. Facsimile: (02) 9845 6316.
Saliva Control Assessment Form

Date: / /
Name:
Form completed by:

1. Communication skills:
   - No problems
   - Some speech which is functional
   - Uses speech to get message across but with difficulty
   - Has difficulty making some sounds in words
   - Has no speech

2. Walking
   - No difficulty
   - Has some difficulty but walks independently without an aid
   - Needs a walking aid
   - Uses a wheelchair all or most of the time

3. Head position
   - Can hold head up without difficulty
   - Tends to sit with head down mostly

4. Is the mouth always open?
   - Yes
   - No
   - Unsure

5. Lips
   - Can hold lips together easily and for a long time
   - Can hold lips together with ease for a limited time
   - Can hold lips with effort for a limited time
   - Can bring lips together only briefly
   - Unable to bring lips together

6. Can s/he pucker lips (as in a kiss)?
   - Yes
   - No
   - Unsure

7. Does s/he push the tongue out when swallows?
   - Yes
   - No
   - Unsure

8. Straw
   - Can use a straw easily
   - Has difficulty using a straw
   - Cannot use a straw

9. Eating/drinking
   - Can eat whole hard foods that are difficult to chew
   - Eats a wide range of foods
   - Needs to have food cut into small pieces
   - Food needs to be mashed/pureed
   - Drinks need to be thickened
   - Has food through a tube (nasogastric / gastrostomy)

10. Is s/he a messy eater?
    - Yes
    - No
    - Unsure

11. Can s/he swallow saliva when asked to?
    - Yes
    - No
    - Attempts
    - Unsure

12. Does s/he notice saliva on lips/chin (perhaps tries to wipe chin)?
    - Yes
    - No
    - Unsure

13. General health
    Does s/he have asthma?
    - Yes
    - No
    - Unsure
    Does s/he have frequently blocked or runny nose?
    - Yes
    - No
    - Unsure
    Does s/he have bouts of pneumonia?
    - Yes
    - No
    - Unsure

14. Are there any difficulties with teeth cleaning?
    - Yes
    - No
    - Unsure

15. Has there been a recent dental check?
    - Yes
    - No
    - Unsure
    IF YES, who?

16. Are there any problems with bleeding gums or decayed teeth?
    - Yes
    - No
    - Unsure

Thank you for completing this questionnaire.
Appendix C

Oral Motor Functional Therapy Clinic
Treatment booklet

Weestwood Centre For Oral Health
Woolsthorpe Hospital
Ph: (02) 89437010

Method of bringing about swallowing

Class-teching

The aim is to bring about swallowing and improve the oral motility of the child.

Hold the child’s jaw and close the mouth.

Caution: During this exercise, do not touch the inner aspects of the mouth.

Tighten the sides of the mouth and bring it up. Place the index finger on the lower lip and bring it back to the lower lip. This movement brings back and forth, pulling from the corners.

Repeat 10 times per day.

This process is then done for the other side of the mouth in the same way.

It does not matter if you use a different finger for each.

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**Tongue Training**

1. **Tongue elevation (correction of tongue muscle)**
   - Hold the jaw closed because normal tongue movement during feeding can loosen the mouth.
   - Place the index finger in the soft area on the inside of the cheek. Place the other index finger in the soft area on the inside of the cheek. This other index finger will aid in the tongue muscle. **REPEAT 5 TIMES PER MEAL**. 
   - Caution: Do not accidentally push the area near the parotid (when applicable).

**Neuro Dysphagia Treatment Recommendations**

- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **1**

- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **2**

- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **3**

**Cheek Training**

- Close the jaw and purse the lips for the exercise.
- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **4**

- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **5**

- **Advanced (person can do by themselves)**
  
  - Close the jaw and purse the lips for 3 seconds, **REPEAT 3 TIMES**

- **Stick Cheek in the mouth**

- Close the jaw and purse the lips for **“just once”** for 3 seconds, **REPEAT 3 TIMES**

- **RECOMMENDATIONS**
  
  - Date: __________
  - Age: __________
  - Height: __________
  - Weight: __________
  
  **6**
ADVANCED LIP EXERCISES

TYPE 1 - "EEE""OOO" 
"eee" Pulling lips forward not a toss
"ooo" Pushing lips forward not a toss
REPEAT 3 TIMES

TYPE 2 - SIDE-TO-SIDE CLOSED LIP POSTURE

Close mouth to the left, then right
REPEAT 3 TIMES

TYPE 3 - GAME

You will need
2 buttons (start with 3 cm diameter, easy grip)
String 0.5-1 cm
(Insert the string through the button holes, tie a loop.
Each person puts a button in between the lips and neck (NOT behind the neck) The person who keeps the button, tugs behind the lips in the sweater, pull against each until the person wins!}

RECOMMENDATIONS

Date: 1.
Age: 2.
Height: 3.
Weight: 4.

5. Closed lip swallowing

Divide the lip into 6 sections:
Following the lip line parallel, place the middle finger (flat) parallel on the lip.
Upper lip - pull down to close the lips in 3 sections.
Lower lip - pull up to close the lip in 3 sections.
Do not let the lips move when contracting the muscle.

RECOMMENDATIONS

Date: 1.
Age: 2.
Height: 3.
Weight: 4.

6. Expansion of lips parallel to the muscle

Place the middle finger (flat) parallel on the lip and expand the muscle.
Do not let the lip move when contracting the muscle.

Note: at the end of the lip exercises lip gently on the chin.
Lip Training

These exercises must be done before meals.

Divide the lip into 5 sections.

1. Conservation of lips versatility
   Following the lips move from one place to another, first part of the figure out, open lips, and then inside.

2. Open Lip-strengthening
   Divide the lips into 4 sections.
   Open Lip: Put the middle finger inside the lips and pull lips inside and down.
   Lower Lip: Put the middle finger inside the lips and pull lips outside and up.
   Reminder: Tighten the jaw while doing these exercises and be careful not to pull
   hard.

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Sticker Page

Sticker Page

Lip and Jaw Support

1. Assistance to close the lips.

   Use this technique if the lower lip does not come up to meet upper lip for swallowing.

   a) To control the jaw, support the mandible using the middle and ring finger.

   b) To control the jaw, support the mandible using the middle and ring finger. Upper lip is controlled by using the index finger and place the thumb on the jaw. It is possible to control, the jaw and lips in this position.

   DO NOT apply pressure to the cheek with the palm of the hand.

   DO NOT push or place pressure on the pharynx (throat) with the ring finger.