

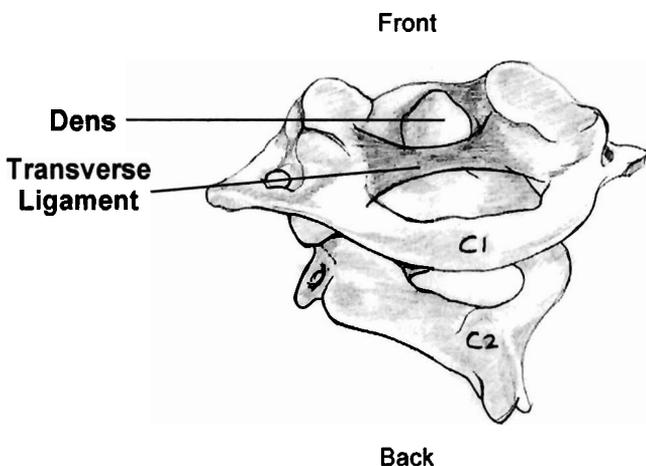
## Mary Pack Arthritis Program Occupational Therapy

### C1-C2 Subluxation and Arthritis

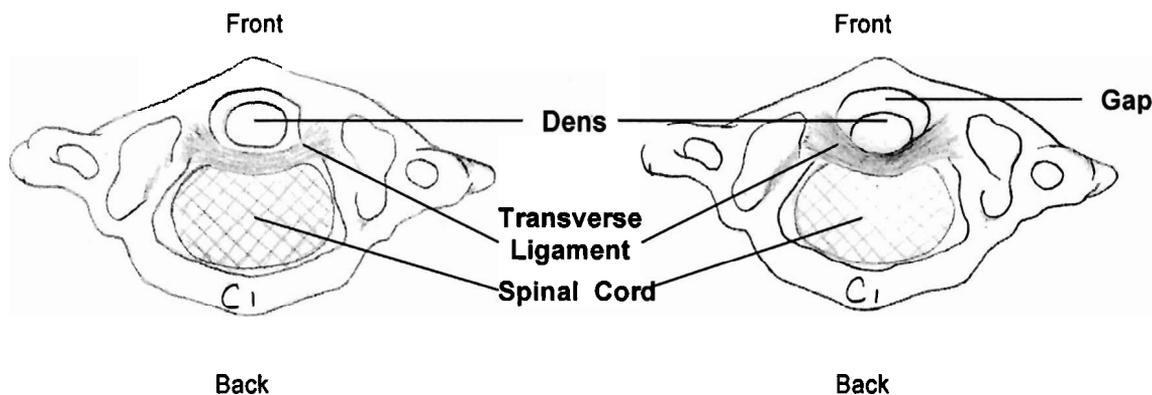
This handout is intended for people with a diagnosis of **C1-C2 subluxation**, also known as **atlanto-axial subluxation**. This condition can occur with several types of arthritis, such as rheumatoid arthritis and ankylosing spondylitis.

#### Anatomy

A small bone at the top of the spinal column, called **C1** or the **atlas**, supports the skull. Directly below it, sits another bone called **C2** or the **axis**. It has a small bony peg, called the **dens** or **odontoid process** that protrudes upwards through an opening in C1. The dens is held in place against C1 by a strong ligament called the **transverse ligament**.



During periods of disease activity, the transverse ligament may become inflamed and over time, it may stretch and weaken. When the head is bent forward, C1 may slip forward too, creating a "gap" in front of the dens. If this slippage is significant, the dens can compress the **spinal cord**, which is located directly behind it, resulting in damage to the cord.



View of C1 above

# Diagnosis

C1-C2 subluxation is diagnosed using x-rays, taken with the neck in flexion (bending the head forward) and extension (bending the head backward). X-rays show instability, which can occur at one or more joints of the spinal column. The severity of spinal cord compression will depend on the degree of instability and the levels at which the cord is affected. An MRI is sometimes used to assess damage to the spinal cord.

## Early Symptoms

- Early stage may be asymptomatic
- Pain radiating upwards from neck to back of head
- Tired or “heavy” head sensation
- Headache at back of head or a band around forehead and temples

## Serious Symptoms

- Dizziness / Loss of balance
- Changes in vision (colored or flashing lights)
- Numbness or paralysis in hands
- Pain at the base of skull, increases with flexion
- Shooting pain down the spine

## Symptoms requiring URGENT treatment

- Sensation of head “falling forward” with neck flexion
- Changes in level of consciousness / “ Drop” attacks
- Loss of sphincter control (bladder or bowel)
- Difficulty swallowing
- Convulsions
- Difficulty speaking due to muscle weakness around mouth
- Loss of sensation in limbs

## What should I do?

- Keep your neck in a **neutral position** (not bent forwards or backwards) as much as possible, both during daily activities and while sleeping.
- **Avoid flexion (forward bending) of the neck**, as this increases the movement between C1 and C2, increasing the pressure on the spinal cord. The most serious consequences of spinal cord damage can be paralysis or death.
- Discuss your symptoms or any change in your symptoms with your rheumatologist.
- If you experience any of the symptoms listed in the **URGENT** section, you should contact your rheumatologist or your family doctor immediately, wear a supportive collar if you have one, and avoid bending your neck and head forward.

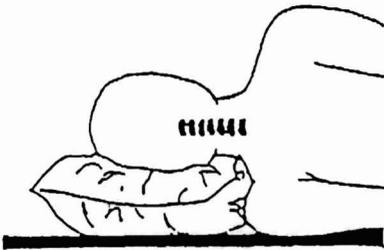
# Tips for Daily Activities

- Inform any person working with your head and neck (i.e. the dentist, the hairdresser/barber) that you cannot bend your neck forward. If possible, wear a collar for these appointments. Be sure to inform your anesthetist before surgery.

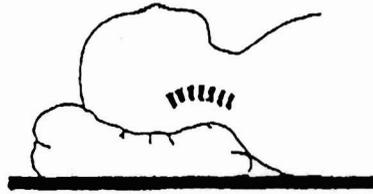
Wear a collar to remind you of the correct neck position (neutral) during activities which are normally done in flexion i.e. reading, typing, etc.



- Wear a collar at times of risk, for example, in the car to avoid sudden flexion during a collision, or whenever there is a risk of falling.
- Sleeping - Sleep on your side or on your back, with your neck supported in neutral. Use one small feather pillow tucked into the curve of your neck to avoid flexion. A soft collar or a special shaped pillow may be useful to help keep your neck in neutral. Avoid foam pillows and sleeping on your stomach.



**Side lying**



**Lying on your back**

- Personal hygiene - Do not wash your hair under a sink tap. In the shower, keep your head in a neutral position while washing your hair and body. Learn to wash by “touch”, rather than by looking down at your legs and feet. A long-handled sponge or scrubber will let you wash your legs and feet without bending your neck. A bath chair or bench may also make bathing easier.
- Dressing - Hold your head and neck straight while putting on pullovers, shirts and sweaters or use cardigans instead. Try to avoid looking down and use “touch” while donning underwear, trousers, socks, and shoes. It may be easier to dress while sitting.

- **Storage cupboards** - Store items most frequently used (especially heavy items) on shelves between shoulder and hip height.
- **Food preparation** - Work on a high countertop if possible or sit to work at a table. Use a book holder for recipes. Ask for assistance to pull heavy items from a low oven.
- **Laundry** - Front-loading machines may be easier to use, but only if raised so the opening is at chest level. Wear a neck collar when bending to retrieve clothing from a top-loading machine and adjust ironing board to a high position.
- **Writing** - Place books and paper on a raised, angled surface on top of your desk in order to bring them closer to eye level.
- **Reading** - Place book as close as possible to eye level by using a book rest on a tabletop or pillows on your lap while sitting or lying in bed.



- **Using a Computer** - The top of your monitor screen should be at eye level for proper head and neck positioning. If possible, learn touch-typing to avoid looking down at the keyboard. Use a "copy holder" or book rest to position work at eye level. Ensure that you have a supportive chair at an appropriate height for you.

