# 1

# Patient Interview

## FAQs

**Q** What should be done if a patient reports having a temporomandibular joint (TMJ) Teflon-Proplast implant, Silastic implant, or TMJ prostheses?

**A** A specific protocol has been recommended for TMJ Teflon-Proplast and Silastic implants and joint prostheses [1]. Follow-up for these is beyond the scope of this book. If the practitioner is unsure of the implant or prosthesis type and management, it is recommended that the practitioner refer the patient to, or work in conjunction with, someone who has greater expertise in this area.

**Q** What are the different situations in which you recommend I refer a patient to someone who has greater expertise in this area?

**A** Table 1.4 provides a list of histories and symptoms that would be identified during the patient interview, for which most general dentists would refer a patient to a practitioner with greater expertise. Table 3.4 provides additional characteristics that would be identified during the clinical exam, for which most general dentists would refer a patient to a practitioner with greater expertise.

**Q** What is secondary gain and how common is it among temporomandibular disorder (TMD) patients?

**A** Secondary gain is a situation in which the patient is rewarded for having TMD; for example, the patient receives disability payments or is excused from undesirable chores or work. Clinically, this is not commonly observed among TMD patients, but, if it is present, the patient may not relate improvement from any therapy.

**Q** What should be done when a patient appears to have a tooth causing or contributing to the TMD symptoms?

**A** The symptoms that suggest that a tooth is causing or contributing to the TMD symptoms are provided in Items 9 and 10 in Chapter 2, and a recommended approach to determine whether the tooth is causing or contributing to a patient's TMD symptoms is provided in "Intraoral Examination" in Chapter 3.

A recommended "Initial Patient Questionnaire" is available on the book's website and may be reproduced or printed for your patients to complete. The questionnaire is designed to efficiently use the time spent interviewing patients. The practitioner's customary medical



*Manual of Temporomandibular Disorders*, Fourth Edition. Edward F. Wright and Gary D. Klasser.

Companion website: www.wiley.com/go/wright/manual

history form should be used in conjunction with this questionnaire.

**◉ Quick Consult**

**Collecting Symptom History**

The "Initial Patient Questionnaire" is designed to efficiently use the time spent interviewing patients and should be used in conjunction with the practitioner's customary medical history form.

The practitioner may wish to add an additional page to obtain medical and dental insurance information and the name and address of the individual who recommended that the patient come to your office, in addition to the name and address of the patient's physician and dentist. It is comforting to a referring provider to receive a letter acknowledging that the referral was appropriate and providing your findings and recommended management. This also tends to encourage the referring provider to recommend your office the next time a patient with a similar complaint needs to be managed. A copy of this letter is often sent to the patient's physician and dentist (if not the referring doctor); a release statement is included in the "Initial Patient Questionnaire" for this purpose.

The questionnaire appears to keep patients from elaborating in nonproductive discussions or becoming irritated by the number of questions asked, and prevents the practitioner from forgetting to ask relevant information. Clinical experience suggests that a patient's responses are not always accurate, and the examiner needs to review the answers with the patient. For better patient recall, it appears best if the patient arrives 15 minutes prior to the appointment and completes the questionnaire just prior to the appointment. During the patient interview, the practitioner usually needs to ask the patient to elaborate on some of the answers.

**◉ Quick Consult**

**Confirming Patient Responses**

Clinical experience suggests that a patient's responses are not always accurate, and the examiner needs to review the answers with the patient.

**⧩ Technical Tip**

**Assisting Patient Recall**

For better patient recall, it appears best if the patient arrives 15 minutes prior to the appointment and completes the questionnaire just prior to the appointment.

Chapter 2, "Review of the 'Initial Patient Questionnaire'," presents the key points for each of the questions and is designed to help a practitioner quickly evaluate a patient's responses. Many of the questions are self-explanatory, but additional discussion for some of the questions, as well as supplementary information, is provided as follows:

Item 1 (On the diagram below, please shade the areas of your pain:) provides a quick overview of the patient's pain locations. From the patient's shaded areas, we observe whether the patient's pain appears to be from (i) the masseter muscle or TMJ (the most common TMD pain locations); (ii) the posterior neck region and locations where neck pain commonly causes referred pain (e.g. periorbital, forehead, and temporalis regions [2, 3]); (iii) the anterior neck region, in which we will attempt to identify whether this is due to a local problem or referred pain (6% of patients with cardiac ischemia only have craniofacial pain, and the anterior neck region is the most common location for referred ischemia pain to appear among these patients [4–8]); or (iv) other types of pain patterns (e.g. sinus pain).

Items 4 and 5 (What makes it feel worse? and What makes it feel better?) provide

insight as to whether the patient's symptoms are due to TMD. One study found that 99% of TMD patients reported their pain was modified by movement, function, parafunctional activity, and/or rest. Intuitively, one would expect movement, function, and parafunctional activity to worsen TMD pain, while rest would improve TMD pain. This is a very powerful way to try to identify patients whose pain is and is not due to TMD. Contrarily, 9% related at least one aspect of their pain was improved by a specific movement; for example, occasionally TMD patients tell us that chewing gum, popping the TMJ, and so on, improve their TMD pain [9].

Item 6 (What treatments have you received?), with additional inquiries, gives an indication of which interventions were previously beneficial for the patient. For example, if the patient found that an occlusal appliance (which the patient no longer has) resolved the symptoms, then fabricating another appliance should be very beneficial. Reinforce to the patient that using the intervention (e.g. application of heat) he or she previously found beneficial can again be beneficial. If the patient has previously received the therapies the practitioner traditionally provides but without satisfactory benefit, the practitioner may consider a review of their initial diagnosis, alter management strategy, or refer the patient to someone with greater expertise in this area.

TMJ implants composed of Teflon-Proplast and Silastic have a history of fragmenting, causing a foreign-body response that results in progressive degeneration of the condyle and glenoid fossa. A specific protocol has been recommended for these implants and joint prostheses [1]. Follow-up for these is beyond the scope of this book. If a practitioner is unsure of the implant or prosthesis type and management, it is recommended that the practitioner refer the patient to, or work in conjunction with, someone who has greater expertise in this area.

Item 7 (When is your pain the worst?) will often help identify the time when significant contributing factors are present. Patients with sleep parafunctional behaviors usually have an increase in pain when they first awake, whereas patients with awake parafunctional behaviors have an increase in pain during the day or evening. The practitioner may be able to elicit more specific periods, for example, during or after driving, or when using the computer.

**Focal Point**

Patients with sleep parafunctional behaviors usually have an increase in pain when they first awake, whereas patients with awake parafunctional behaviors have an increase in pain during the day or evening.

**Quick Consult**

**Observing for Significant Contributing Factors**

When discussing a patient's symptom pattern, a practitioner may be able to elicit specific periods when significant contributing factors are present, for example, during or after driving, or when using the computer.

Item 8 (What does the pain keep you from doing?) gives the practitioner a sense for how much the pain is affecting the patient's life. This may correlate with how motivated the patient will be to participate in therapy and the level of therapy the patient may be interested in receiving. Occasionally, this answer is out of proportion with other features of the examination; for example, the patient is unable to work, but has only minimal palpation tenderness. Additional questions may reveal the patient continues to participate in other activities, such as yelling at basketball games. This inconsistency may suggest that other factors are involved, commonly referred to as **secondary gain** [10].

Item 9 (Is your pain…) helps identify some possible conditions for a patient's pain.

Patients most commonly characterize TMD pain as having an ache, pressure, or dull pain quality. If throbbing is one of the components, generally, the patient's disorder falls within one or more of the following three situations:

First, some patients report their pain is an ache, pressure, or of dull quality and, when it worsens, its quality may change to throbbing. The patient may have nausea, photophobia, and/or phonophobia associated with the throbbing pain. For these patients, clinically it appears that, if the ache, pressure, or dull pain can be satisfactorily reduced, this can prevent the pain sequence from escalating to the throbbing level.

**◉ Quick Consult**

**Reducing Throbbing Pain**

Clinically, it appears that if a patient relates the ache, pressure, or dull pain worsens to throbbing and can be satisfactorily reduced, this prevents the pain from escalating to the throbbing level.

In a second situation, the patient does not report that an ache, pressure, or dull pain progresses into throbbing pain. The source of the two types of pain may be from different sources, and the throbbing pain may not respond to TMD therapy. In this situation, the practitioner may wish to perform an occlusal appliance therapy trial and, if it is not effective, consider a referral to the patient's physician or neurologist for a probable neurovascular condition often diagnosed as migraine. Studies suggest that some migraines respond to TMD therapy, but characteristics for identifying which migraines respond are not well established [11, 12].

For other patients, the throbbing pain may be **referred pain** from an oral problem (most commonly a tooth). Sometimes the perceived painful **site** (e.g. masseter muscle and/or TMJ) appears as the **source** to the patient, whereas the actual source (e.g. a tooth) has minimal symptoms. This is similar to how a patient suffering from a heart attack may perceive pain only in the left arm, whereas the pain's source is the heart. Management for the pain must be directed toward the source, not the site where it is felt.

**◉ Quick Consult**

**Observing for Throbbing Pain Sources**

Throbbing pain may be referred pain from a pulpitis.

Innervations from tooth pulps and the masticatory musculoskeletal system appear to travel along similar pathways, so pain from one can sensitize common areas within the CNS, causing the pain to be perceived as from the other. There are also more nerves that enter the CNS than there are neurons to transfer the information to higher CNS centers, requiring pain input to **converge** from multiple sources (Figure 1.1). This may also cause pain from one source to be perceived as from the other. Additionally, muscles often respond to pain in the region by tightening, increasing the TMJ loading, causing pain in the masticatory muscles as well as the TMJ. Clinically, this sequence of events may manifest as a masticatory muscle or the TMJ being perceived as the source of the odontogenic pain, and upon palpating the tender structure identified as the pain's site, the patient relates this reproduced or intensified pain as the chief complaint.

A study of patients suspected of having TMD by their dentists, but whose TMD pain upon additional examination was found primarily to be referred odontogenic pain, reported that (i) none of the periapical radiographs revealed apical pathosis, and (ii) patients related that palpating the perceived painful site often reproduced their pain [13].

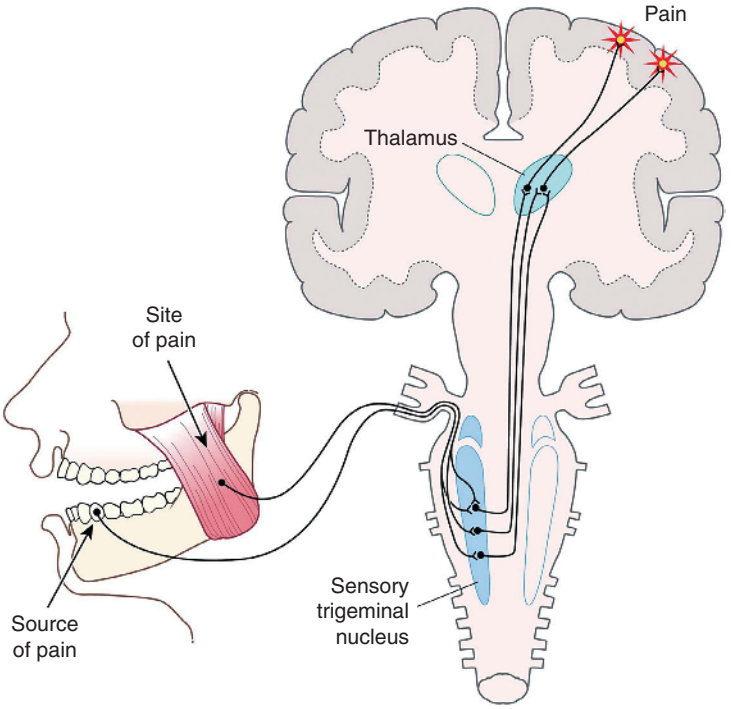


**Figure 1.1** A depiction of central convergence enabling tooth pulp pain to be perceived as masseter muscle pain.

The study found three helpful characteristics for identifying patients who have a tooth causing or contributing to their TMD symptoms: (i) the pain wakes the patient at night, (ii) the pain increases when the patient lies down, and (iii) the pain increases when the patient drinks hot or cold liquids; these are provided in Table 1.1. These patients also had a throbbing pain quality, which can also be due to TMD. Evaluating and treating referred odontogenic pain are discussed further in Item 10 and in "Intraoral Examination" in Chapter 3. A case scenario of a patient with this disorder is presented in "Case 1" in Part V.

Burning is infrequently reported by TMD patients, whereas most neuropathic pains in the masticatory system include a burning quality [14, 15]. Clinical experience has shown that if burning is combined with the typical TMD pain qualities (ache, pressure, or dull pain), usually the burning correspondingly resolves with the ache, pressure, or dull pain from TMD therapy. If burning is the patient's most prominent pain quality or did not resolve from initial TMD therapy, the practitioner may wish to refer the patient to someone with greater expertise in this area to evaluate the patient for neuropathic pain. A method for identifying these practitioners is provided in "Practitioners with TMD Expertise and Fellowship Programs" which is available on the book's website in the file "Sources for Additional TMD Information."

In addition to those already discussed, many other pain qualities are possible, for

**Table 1.1** Symptoms suggesting that the patients may have a tooth causing or contributing to his or her TMD symptoms.

| |
|---|
| • The TMD pain wakes the patient at night. |
| • The TMD pain increases when the patient lies down. |
| • The TMD pain increases when the patient drinks hot or cold liquids. |

example, an electrical or stinging sensation. Knowledge of a patient's pain qualities will help a practitioner determine whether TMD a high probability of benefiting the patient or whether these therapies may delay the evaluation for another, more probable, disorder.

Item 10 attempts to identify whether the practitioner should be suspicious that odontogenic pain, neck pain, or sinus congestion may be contributing to the patient's complaint. Clinical experience has shown that TMD pain rarely wakes patients up during sleep, but odontogenic pain and neck pain commonly wake patients during sleep [16]. The patient may not be aware that the neck is the source and may only perceive pain at a different referred pain location. Identifying referred pain from the neck is discussed further in "TMD Palpations" in Chapter 3.

◉ **Quick Consult**

**Observing for Sinus Congestion Contribution**

Patients with sinus congestion tend to find an aggravation when they lower their head position, that is, lie down or bend forward.

Historically, patients with odontalgia tend to report their pain wakes them during sleep, increases when they lie down, and/or increases when they drink hot or cold liquids. If a patient responds positively to one or more of these questions or has throbbing pain, this should raise a suspicion that a tooth may be causing or contributing to the TMD symptoms [13].

◉ **Quick Consult**

**Observing for Odontalgia Contribution**

Historically, patients with odontalgia tend to report their pain wakes them during sleep, increases when they lie down, and/or increases when they drink hot or cold liquids.

Sometimes patients incorrectly answer "Yes" to the question "Does your pain increase when you drink hot or cold liquids?" When these patients elaborate, it becomes apparent that cold only causes tooth discomfort rather than aggravating their facial pain. Clinical experience has shown that thermal sensitivity of the teeth is common among TMD patients.

When the practitioner suspects that a tooth may be causing or contributing to the TMD symptoms, further evaluation is indicated. A recommended evaluation approach and treatment considerations are provided in "Intraoral Examination" in Chapter 3.

Patients with sinus congestion tend to find an aggravation when they lower their head position, that is, lie down or bend forward. If the patient responds positively to either of these questions, it is recommended that the practitioner further inquire as to whether sinus congestion appears to contribute to the pain; for example, whether the patient finds decongestants or antibiotics help relieve the pain. If the patient is unaware of the impact from these and the practitioner suspects sinus congestion involvement, the practitioner may wish to determine the degree the sinus congestion is contributing to the TMD symptoms. He or she may do this by providing a trial with an oral decongestant, nasal spray decongestant, and/or antibiotic (e.g. Sudafed [pseudoephedrine HCl] 60 mg, 1 tab q 4 to 6 hours; Afrin [oxymetazoline HCl] 0.05%, two sprays in each nostril q 12 hours; and/or Augmentin [amoxicillin/clavulanate] 875 mg, 1 tab b.i.d. for 10 days [all have generic formulations]), listed in Table 1.2. If the sinus congestion is of recent onset and within a week of the patient having a cold, the sinus disorder is probably due to a virus and antibiotics may not be beneficial [17].

If the sinus congestion is a chronic disorder, it is recommended that the patient be referred to the patient's physician for evaluation and long-term management of the sinus problem. Eliciting pain from palpating over the sinuses can rule in the probability of sinus involvement, but not eliciting pain

**Table 1.2** Medications to temporarily reduce sinus pain.

| Category | Medication | Instructions |
|---|---|---|
| Oral decongestant | 60 mg pseudoephedrine HCl | 1 tab q 4 to 6 hours |
| Nasal spray decongestant | 0.05% oxymetazoline HCl | 2 sprays in each nostril q 12 hours |
| Antibiotic | 875 mg amoxicillin/clavulanate | 1 tab b.i.d. for 10 days |

upon palpation cannot rule out sinus involvement [15]. A case scenario of a patient with chronic sinusitis is presented in "Case 3" in Part V.

Items 11–13 attempt to quantify the pain, requiring the patient to delineate its intensity, frequency, and duration. The first two questions introduce patients to rating their pain intensity from 0 to 10 (0 = no pain; 10 = pain as bad as it can be) and give the practitioner a sense of the patient's pain history. This numerical rating system (NRS) is the most effective manner we have at this time for rating pain intensity [18]. A concise and commonly used terminology for frequency is "constant" (always present), "daily" (occurs every day, but not constantly), "weekly" (occurs every week, but not daily), and so on. Duration may be momentary, "intermittent" (fluctuates from being present to being absent), the average number of seconds to hours, or constant. The pain may vary greatly and can be difficult to quantify accurately. For brevity, it is often clinically satisfactory to just document the average intensity and frequency in the patient's record, but in some situations, the practitioner may want to include the extremes and/or durations.

Item 14 attempts to identify unusual symptoms, which may be suggestive of other disorders that could mimic or coexist with TMD. For example, a progressively increasing open bite of the anterior teeth may be from the TMJ losing its vertical height, generally due to severe TMJ osteoarthritis and/or idiopathic condylar resorption [19]. As the condylar height collapses, the most posterior ipsilateral (affected side) tooth becomes the first tooth to contact, acts as a fulcrum, and progressively creates an open bite for the remaining dentition. The open bite generally begins on the contralateral (nonaffected side) anterior teeth and progressively spreads bilaterally until the only tooth that contacts is the most posterior ipsilateral tooth. This disorder and its management are complicated and beyond the scope of this book. Practitioners observing this complaint may wish to refer the patient to someone with greater expertise in this area.

It is not uncommon for a patient to relate autonomic changes, which are induced by central sensitization produced by the pain. These can include the face becoming red, puffy, or having thermal changes near the area of the pain; the eye becoming bloodshot or tearing; and/or the nose running or becoming congested. These autonomic changes occur when the pain is aggravated and should resolve when it lessens or resolves [20]. They are sometimes reproduced when the practitioner aggravates the pain during the palpation evaluation.

**Headache** is another symptom patients report for this item. If the patient relates this is a new severe headache, there are many serious disorders that can cause this symptom, and the patient needs to see a physician to evaluate the patient for these potential causes.

This book recommends management for TMD and cervical pain. There is an interrelationship between TMD pain, cervical pain, and chronic headaches, and many therapies used to treat TMD and cervical pain are also used to treat chronic headaches [21, 22].

We recommend that you manage the patient's TMD pain and refer for cervical

pain, as the symptoms warrant, as outlined in this book, and inform the patient that there is potential it may also benefit the chronic headache. If the patient does not obtain satisfactory headache benefit, we recommend that the patient be referred to a neurologist for pharmaceutical management.

Management of TMD and the cervical region has been shown to be beneficial for tension-type, migraine without aura, and migraine with aura headaches. The degree of headache improvement is quite varied among these studies, and no clinical characteristics have been identified for which patients are more likely to obtain headache improvement from TMD or cervical therapies [11, 23].

Our recommendations for chronic headache patients are provided in Table 1.3.

**Table 1.3** Recommendations for chronic headache patients.

With headache diagnoses of tension-type, migraine without aura, migraine with aura, or combinations of these headaches

| Presentation | Therapy |
|---|---|
| If the patient has significant TMD pain that is worthy of receiving TMD therapy, | Provide TMD therapy and the patient may obtain significant headache improvement from this intervention. |
| If the patient has significant neck pain that is worthy of receiving neck therapy or the headache is reproduced when the neck is palpated, | Refer patient for neck therapy and the patient may obtain significant headache improvement from this intervention. |
| If patient's headaches cannot be adequately controlled with medications by physicians and the patient has masticatory or neck tenderness, | Provide TMD therapy or refer patient for neck therapy, starting with the more tender area. The patient may obtain significant headache improvement from one or both of these interventions. |

Items 15–17 provide a rapid tool to screen for a non-TMD that may be the cause of the pain or negatively impact it [24, 25]. The practitioner can skip each question the patient answers with a "No" but needs to inquire further and consider the comments in a "Review of the 'Initial Patient Questionnaire'" (Chapter 2) for each question with a "Yes" answer.

Two disorders that are moderately prevalent among TMD patients often negatively influence TMD symptoms and management, and the practitioner must be very observant to identify them. The first is **cervical pain**; one study found that 51% of TMD patients had cervical pain [26]. Cervical pain may not only directly affect the masticatory system and its ability to respond to therapy, but it may also cause referred pain to the masticatory structures, which can add to a patient's TMD symptoms or be the sole cause of the TMD symptoms [2, 3, 25].

**◉ Quick Consult**

**Observing Cervical Pain and Fibromyalgia Effects on TMD Therapy**

Cervical pain and fibromyalgia often negatively influence TMD symptoms and management response.

Recommended cervical palpation techniques to identify referred pain from the cervical region to the head and face are provided in "TMD Palpations" in Chapter 3. The scope of clinical practice for TMD has been determined to include the diagnosis and management of disorders affecting the entire head and neck. This is consistent with the historical precedent in dentistry and within the scope of current dental practice [27].

The other disorder that practitioners must be very astute in identifying is **fibromyalgia**. It is characterized by widespread body pain, multiple tender points over the body, poor sleep, stiffness, and generalized fatigue. Only about 4% of the general population has

fibromyalgia, whereas 18–23% of TMD patients have it [25, 28].

It has been shown that TMD patients with fibromyalgia, widespread body pain, or neck pain do not respond as well to TMD therapies as do those without these comorbid disorders [29–31]. Therefore, it is important to identify patients with these disorders and inform them about the potential negative impact this may have on their management plan. If it appears a patient is not receiving adequate therapy for the coexisting disorder, it is recommended that the patient discuss management alternatives with his or her medical provider or be referred to someone who specializes in the area. Rheumatologists or physical medicine and rehabilitation (PMR) physicians generally specialize in fibromyalgia and widespread body pain disorders.

It is recommended that patients suspected of having fibromyalgia be referred to a physician for definitive diagnosis and management. There have been instances in which patients diagnosed with fibromyalgia by rheumatologists or PMR physicians have had their fibromyalgia advance to other disorders, such as multiple sclerosis [32].

Items 18, 19, and 20 ask about TMJ noise and the inability to open or close the mouth. The latter can be of muscle or TMJ origin. A "TMJ Disc–Condyle Complex Disorders" diagram is available on the book's website and may be reproduced or printed for your patients. It is helpful for explaining the cause of their TMJ noise and/ or inability to open or close.

◉ **Quick Consult**

**Explaining Mechanical Disorder**

A "TMJ Disc–Condyle Complex Disorders" diagram is available on the book's website and is helpful for explaining the cause of a patient's TMJ noise and/or inability to open or close.

The diagram is broken into four sections, with the top left section providing a view of the skull with the zygomatic arch removed so the entire temporalis muscle can be visualized. This enables the provider to demonstrate how the temporalis muscle functions and how clenching or other oral behaviors can overuse this muscle, thereby causing fatigue and pain similar to that caused by overuse of any muscle in the body. The zygomatic arch can be drawn in and the masseter muscle drawn over the ramus, and a similar discussion about muscle-overuse pain can be provided. The lateral pterygoid muscle can also be drawn to explain the symptoms and therapies for lateral pterygoid spasm (explained in Chapter 9, "Lateral Pterygoid Spasm"). The articular eminence is also displayed so that condylar subluxation (the condyle catches in front of the eminence) or luxation (the condyle locks in front of the eminence) and its management may be demonstrated. Conservative therapies for these disorders are provided in Chapter 11.

To orient the patient for the next section of the diagrams, point to the ear on the skull and then to the ear in the top right section. This drawing provides an avenue to explain the "normal" disc–condyle relationship. If the patient has a TMJ click or pop, the most probable situation is that the elastic ligament (the retrodiscal tissue, in addition to its attachment complex) is stretched and the disc–condyle relationship looks like the top drawing in the bottom left section in which the disc is displaced. As the condyle translates forward (e.g. during opening), it moves into the center (intermediate zone) of the disc (the reduced position), and, as the individual closes, the condyle retrudes off the disc. This is commonly referred to as **TMJ disc displacement with reduction**, which is the terminology that is used in this book.

This section can visually explain the opening and/or closing click. Sometimes patients are also informed about how the tension in the closure muscles (temporalis, masseter, and medial pterygoid) brace the condyle in a superior position, which may promote a

greater mechanical interference between the condyle and disc [33]. Clinically, patients report this effect by their TMJ click, catch, or lock occurring more frequently or with greater intensity when they are stressed, while eating especially with foods that are of a tougher consistency, or after clenching their teeth.

For patients experiencing limited translation due to the disc blocking their normal opening (**TMJ disc displacement without reduction with limited opening or closed lock**), the bottom right diagram can help visually explain the mechanical problem and management. This is discussed in Chapter 5, "TMD Diagnostic Categories," and in Chapter 10., "Intermittent and Continuous forms of TMJ Disc Displacement without Reduction with Limited Opening."

Many patients report the presence or history of TMJ noises (Item 18), since TMJ clicking or popping is very prevalent among the TMD and general populations [34, 35]. These noises may occur with opening and/or closing, can fluctuate in intensity, and occur sporadically. If a patient has a TMJ click or pop that the practitioner can feel, the most likely diagnosis is TMJ disc displacement with reduction [2, 36, 37]. If the joint noise is crepitus, then the most likely diagnosis is **degenerative joint disease**; see Chapter 5 for an explanation of this terminology [32]. A more accurate assessment of the disc–condyle alignment can be obtained by magnetic resonance imaging (MRI) of the TMJ, but the findings rarely change the management approach, and MRI is rarely indicated at the initial TMD evaluation [38]. For more information on TMJ imaging, see Chapter 4, "Imaging."

**Quick Consult**

**Requesting MRIs**

MRI findings rarely change the management approach, and MRI is rarely indicated at the initial TMD evaluation.

The inability to open wide (Item 19) is generally due to either a TMJ disorder (e.g. disc displacement without reduction with limited opening or closed lock) or a muscle disorder. Discussing the onset and its history is often beneficial and may aid in determining the cause. If this limitation is intermittent, patients with a disc displacement with reduction with intermittent locking are usually aware that the TMJ is blocked at the opening where the TMJ normally clicks or pops. Typically, they suddenly have a restricted opening, which just as abruptly releases, allowing them to obtain their normal opening once again. The TMJ locking disorder may be continuous, but often has a history of being intermittent. Conversely, an intermittent muscle disorder generally develops and resolves slowly for each episode.

**Focal Point**

If a TMJ disc intermittently blocks a patient from opening wide, the patient is usually aware that the TMJ is blocked at the opening where the TMJ normally clicks or pops, it suddenly occurs, and just as abruptly releases; conversely, an intermittent muscle disorder generally develops and resolves slowly for each episode.

If a patient has a restricted opening, the practitioner may be able to determine its origin by stretching the mouth wider. This is usually done by placing the index finger over the incisal edges of the mandibular incisors and the thumb over the incisal edges of the maxillary incisors and pressing the teeth apart by moving the fingers in a scissor-type motion (Figure 1.2). The patient will usually feel tightness or pain at the location of the restriction, and the patient is asked to point to this source. From clinical experience, not all patients accurately point to the stretched discomfort location, and it is necessary to palpate the TMJ and musculature to reproduce the stretched discomfort in order to accurately identify its origin.

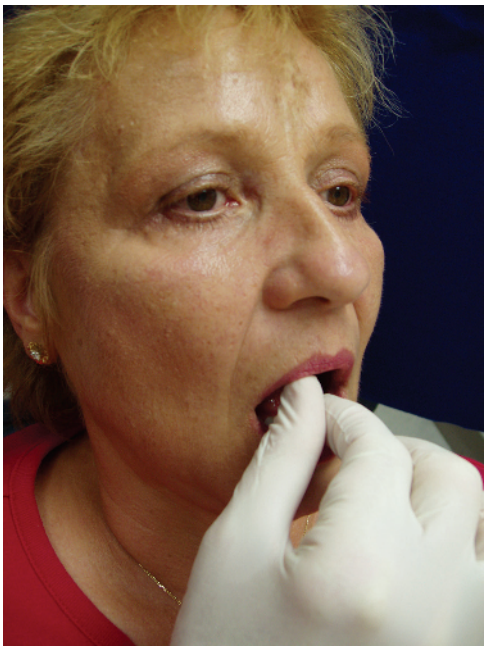

Figure 1.2 Stretching a restricted opening to determine the origin of the restriction.

**Technical Tip**

**Determining Origin of a Patient's Restricted Opening**

The practitioner may be able to determine a patient's restricted opening origin by stretching the mouth wider and determining the location of the created discomfort.

It should be kept in mind that there are other potential, though less common, causes for patients having a restricted opening. Generally, these patients complain only about a restricted opening, not pain [11]. Some examples of these are TMJ ankylosis, contracture, coronoid hyperplasia and tumor [39–41]. These disorders are beyond the scope of this book, and if the practitioner suspects the patient may have one of them, he or she may wish to refer the patient to someone with greater expertise in this area.

Patients may report episodes of being unable to close their mouth (Item 20). From clinical experience, there are several common causes for a positive response to this question. If the patient reports the TMJ catches or locks at an opening of 45 mm or wider, the condyle has the potential of being in front of the eminence (TMJ subluxation or luxation). Among patients with this complaint, multiple disc–condyle relations have been observed, and investigators have postulated that the catching or locking is due to (i) the articular eminence obstructing the posterior movement of the disc–condyle unit, (ii) the disc obstructing the posterior movement of the condyle, or (iii) a combination of the two [42]. Traditional TMD therapies have been shown to improve this condition [43]. Conservative therapies for TMJ subluxation and luxation are provided in Chapter 11.

If the patient's TMJ catches or locks during closure in a range of approximately 10–35 mm, the articular eminence should not be involved, and it would most probably be only the disc that is obstructing the posterior movement of the condyle. There is no consistent disc–condyle relationship for this interference, but it is speculated the most common scenario is that the patient has a TMJ disc displacement with reduction. The interference occurs during closure when the condyle is in the reduced position and the condyle has difficulty moving or is temporarily unable to move below the posterior band of the disc; this is the typical location of the closing click. This closing catch or lock occurs similarly to the way in which an opening click's mechanical interference worsens to become an opening catch or lock. The bottom left diagram of the "TMJ Disc–Condyle Complex Disorders" handout (available on the book's website) may help to visually explain this mechanical interference to patients. From clinical experience, this problem resolves with traditional conservative TMD therapies.

A third common cause of patients reporting an inability to close is a **lateral pterygoid spasm**. In this situation, the inferior lateral pterygoid muscle is in constant involuntary contraction at a partially shortened position. This is similar to the calf muscle cramp that

has awakened many of us during sleep. Upon awaking, the individual notes the calf pain and calf cramp in which he or she has difficulty and increased pain when attempting to move the foot up or down. A patient with a lateral pterygoid spasm similarly has difficulty and increased pain when attempting to translate the condyle forward or retrude the jaw so the teeth fit into maximum intercuspation. The patient usually complains of the inability to put the ipsilateral posterior teeth together without excruciating pain, the teeth are usually separated by a fraction of a millimeter to a few millimeters, and the first tooth contact is in the area of the contralateral canine (if the patient has normal tooth alignment) [44]. Since the patient has difficulty translating forward, he or she usually also has a marked limited opening. A diagnostic test and therapies are provided in Chapter 9, "Lateral Pterygoid Spasm."

Items 21–27 ask about potential contributing factors to a patient's TMD. Some contributing factors are not asked about in this questionnaire, but will become apparent when the provider or staff member reviews the "TMD Self-Management Therapies" handout with the patient (e.g. gum chewing, caffeine consumption, or stomach sleeping). This handout is available on the book's website.

Poor sleep may constitute the inability to fall asleep, stay asleep, or awake feeling rested (Item 21). Poor sleep has been shown to correlate with increased muscle pain and can be a predictor of patients who will respond poorly to TMD therapy [45–47]. A good system to use to evaluate poor-sleep severity is to ask the patient to rate his or her sleep quality between 0 and 10. Intuitively, when most of us do not get adequate sleep, we tend to feel more aches and pain, be more irritable, and so on. The effects of inadequate sleep tend to contribute to a TMD patient's symptoms on both a physical and psychosocial basis [46]. From clinical experience, when a patient relates that poor sleep is primarily due to TMD pain, it has been observed that, when the TMD pain resolves, generally, the sleep problem also resolves. To ensure a patient's needs and desires are met, when other causes of poor sleep are involved, the provider may ask the patient to discuss this with his or her physician, refer the patient for relaxation therapy, or refer the patient to someone who specializes in sleep disorders. If the patient has poor sleep and awakes with morning TMD pain, the practitioner may wish to prescribe amitriptyline or nortriptyline; see "Tricyclic Antidepressants" in Chapter 17 for additional information.

It is important that the practitioner identify whether obstructive sleep apnea (OSA) may be the cause for the patient awaking feeling tired. Patients with OSA may also awake with a headache that can be similar to a headache from heavy sleep parafunctional behaviors. Patients with OSA generally relate that they snore loudly at night, occasionally awake gasping for air, are drowsy throughout the day, and easily fall asleep during the day. The provider may ask the patient to discuss this with his or her physician and may request a sleep study to determine the cause for the poor sleep [47].

Patients may relate they do not sleep well due to posttraumatic stress disorder (PTSD), in which they may awake with nightmares where they re-experience the traumatic event. PTSD is strongly linked with TMD symptoms [48], and if these patients have not received pharmaceutical and psychological therapies to help control this disorder, they should be referred for these services. Some PTSD patients who are "maximally pharmaceutically managed" and receiving psychological therapy still awake from their PTSD nightmares with all of the muscles in their body intensely contracted. Our clinical experience with these PTSD patients is that a maxillary acrylic stabilization appliance helps reduce the amount of masticatory pain they awake with from these nightmares and helps to protect the teeth from fracturing. If they do not receive sufficient benefit from this, they may find an opposing mandibular soft thermoplastic stabilization appliance, as described in "Soft Thermoplastic Stabilization Appliance" in Chapter 12, provides additional benefit [49].

Patients with fibromyalgia may also relate that they do not sleep well. These patients have widespread body muscle pain and fibromyalgia is discussed earlier under Items 15– 17.

Occasionally, patients relate their TMD symptoms awake them from their sleep. Clinical experience suggests that pain of this severity is generally not due to TMD, but most commonly due to tooth pulp or cervical pain being referred to the masticatory musculoskeletal system.

**Focal Point**

Poor sleep has been shown to correlate with an increase in muscle pain and can be a predictor of patients who will respond poorly to TMD therapy.

The usual portion of the day in which a patient feels most overwhelmed, tense, aggravated, or frustrated (Item 22) is an indicator as to the impact these feelings may have on the TMD symptoms. Patients with TMD tend to hold more tension in their jaws, clench their teeth, or engage in other nonfunctional activities during these times [50–52], and some may be aware of these behaviors. Some patients may hold their teeth together throughout the day and squeeze them during these times, whereas others are adamant that they never touch their teeth, but after observing for these behaviors will later find they clench or tighten their masticatory muscles during such times. It is a challenge to help patients understand their unconscious awake behaviors that are contributing to their TMD symptoms. Some dentists train a psychologist or staff member to help patients recognize and control their awake contributing behaviors. A diary in which patients hourly record their TMD symptoms and tension levels often helps patients recognize and learn about these associations and thereby provides the motivation to change their tension levels.

Psychosocial stress may also increase sleep parafunctional activity. In one study [53], subjects wore devices to bed that recorded sleep EMG activity, and subjects were able to correlate higher sleep EMG activity with stressful life events (Figures 1.3 and 1.4).

**Technical Tip**

**Reducing Tension Levels**

A diary in which patients hourly record their TMD symptoms and tension levels often helps patients recognize and learn about these associations and thereby provides the motivation to change their tension levels and behaviors.

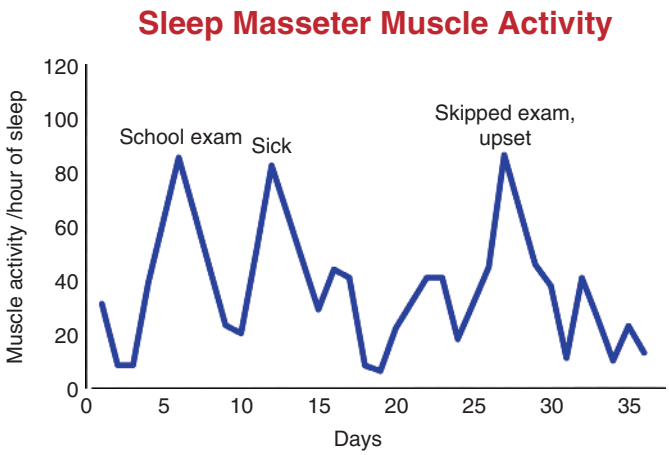


**Figure 1.3** Correlation of increased sleep masseter muscle activity with stressful life events [53].

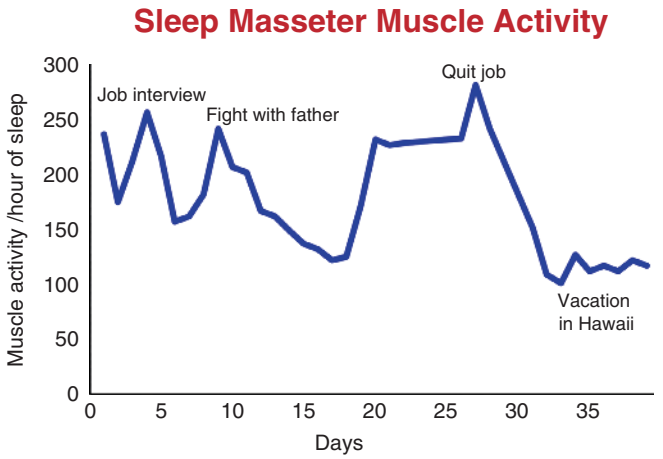


**Figure 1.4** Correlation of increased and decreased sleep masseter muscle activity with more and less stressful life events, respectively [53].

Clinically, it has been observed that TMD patients often deny having stress because they relate the term "stress" to more significant events than they have in their lives. Terms that patients seem to acknowledge having that tend to be associated with these behaviors are "tension," "aggravations," "frustrations," "concerns," "busyness," "overwhelmed," "more of life's stuff," or "more of life's situations."

Once patients recognize they have one of these feelings, it is recommended that their preferred term be used in future discussions. Discuss the likelihood that this psychosocial contributor is associated with their pain because patients tend to hold more tension in their jaw muscles (also neck and shoulders if they also have pain or tenderness in these areas) during such times.

There are two approaches patients can use to reduce the symptoms related to these psychosocial contributors. They can learn to reduce the psychosocial contributors (using coping strategies, stress management, etc.) and/or become very aware of their propensity to tighten their muscles during such times and break this behavior. A combination is generally used when patients are referred to a psychologist for management of this problem.

Sometimes, a patient's concerns are overwhelming, and the patient wants to discuss them with a trained professional and learn coping skills. Two examples of referrals to a psychologist are available on the book's website.

Patients with depression have been shown to not respond to TMD therapy as well as most other TMD patients [54], and the portion of the day in which a patient usually feels depressed (Item 23) is an indicator as to the impact this may have on the patient's TMD symptoms. For providers to obtain a better feel for its significance, patients can be asked to rate their depression or other psychosocial contributor on a 0–10 scale. Clinical experience suggests that patients who are depressed and not open to discussing or receiving therapy for their depression minimize their answer with "seldom" or "never." For patients who mark "always" or "half the time," it is recommended that the practitioner discuss the patient's depression and referral options, that is, primary medical provider (to discuss management options), psychologist (primarily manages through discussions), and/or psychiatrist (a physician who primarily manages with medications). Based on clinical experience, when a patient relates the depression is primarily due to TMD pain, the depression generally resolves when the TMD pain resolves.

**Focal Point**

Depression negatively influences TMD symptoms.

Suicide is one of the three leading causes of death for individuals aged 15–34 years, and adolescents and adults who suffer from chronic pain are at increased risk for suicide ideation and attempts [55–57]. If a patient relates he or she has thoughts of hurting himself or herself, or committing suicide (Item 24), you must determine lethality. Ask the patient whether he or she has a plan, a time selected, and the means selected of carrying this out (pills, gun, etc.). If the answer is "Yes" to any of these, the patient must immediately be evaluated by someone trained in psychosocial suicide assessment to determine whether suicide is imminent, that is, a clinical social worker, psychologist, psychiatrist, your local hospital's suicide prevention team, the authority received by calling 911, or the police department's emergency psychiatric evaluation team. Do not allow the patient to leave without an escort (i.e. a staff member, responsible family member, police, or hospital personnel sent to your office) unless he or she has been cleared by an appropriate person. Clearly document your findings, actions, and follow up on your referral. Your local suicide prevention hotline can provide information about resources available in your community, and you can obtain more information from the American Foundation for Suicide Prevention (AFSP; www.afsp.org).

A considerable amount of time spent singing or playing a musical instrument (Item 25) may also significantly contribute to a patient's TMD symptoms. The impact will vary with the instruments and the amount of time spent in the activity. It has been speculated that wind instruments, some string instruments (violin and viola), and singing have the greatest potential for contributing to TMD symptoms [58, 59]. A patient's symptom time pattern should give an indication of the impact singing or playing the musical instrument has on the symptoms. Sometimes, these activities are the patient's sole source of income, so the patient will have to weigh the cost and benefit of limiting or changing the intensity of these activities.

Studies that inquired numerous times throughout the day as to whether subjects were engaged in a nonfunctional tooth contact activity found that TMD subjects have their teeth in contact significantly more often than non-TMD subjects [51, 60]. It is common for many individuals to allow their opposing teeth to contact, but it appears when this behavior is excessive that it may be a significant contributor to TMD symptoms (Figure 1.5) [51]. It is recommended that patients never hold their teeth together except momentarily when swallowing (Item 26). This question nicely leads into discussing the patient's awake behaviors and the importance of controlling them. The following analogy is used, demonstrating with my arm, to help the patient understand the impact holding the teeth together may have on his or her pain.

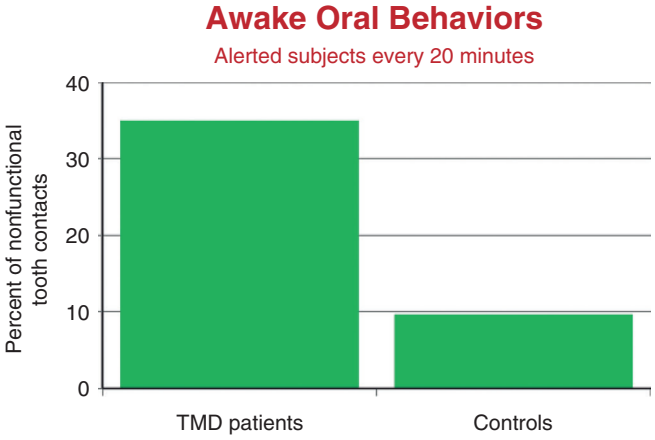


**Figure 1.5** Alerted TMD patients and healthy control subjects every 20 minutes from 8 a.m. to 10 p.m. and found that TMD patients were significantly more often engaged in a nonfunctional tooth contact activity [51].

Whenever my fingertips touch the palm of my hand, the muscles in my forearm must flex. If one were to hold this, the muscles would eventually fatigue and start to hurt. If this were a recurring behavior, as the day becomes busy, frustrating, or irritating, the individual would most likely unconsciously squeeze his or her fingertips into the palm, overuse these muscles even more, and develop forearm pain. If the individual were to go to a physician and complain about the forearm pain, he or she would wonder why this muscle is so tender and painful compared with the other muscles in my body. The physician would need to realize this localized pain was caused by that behavior and would conclude the best way to treat this muscle disorder is for the individual to control the behavior.

If the patient does not have a widespread body disorder (e.g. fibromyalgia), I touch his or her biceps and forearm while I say, "Your biceps and forearm are not tender, so there must be something you are doing to overuse your jaw muscles. If your jaw muscles were relaxed, your jaw would drop away from your upper teeth, just as we allow our arms to hang loose and drop (at the same time I allow my arms to go limp and drop). Your jaw should be hanging lose all day with your lips just lightly touching (unless the patient is a mouth breather)."

If patients are aware of clenching, grinding, or any other oral behavior (Items 27 and 28), they should be informed of how these negatively affect their TMD symptoms. Sometimes, controlling these behaviors and using the "TMD Self-Management Therapies" handout (available on the book's website) will satisfactorily decrease a patient's TMD symptoms.

Item 31 helps a practitioner determine whether a patient might have giant cell arteritis (temporal arteritis) [61, 62]. Giant cell arteritis may mimic mild TMD symptoms, has been misdiagnosed as TMD, and may cause blindness within a relatively short time if not treated [63]. As many as 20–60% of inadequately treated or untreated patients lose their vision [62].

**◉ Quick Consult**

**Observing for Giant Cell Arteritis**

Giant cell arteritis may mimic mild TMD symptoms, has been misdiagnosed as TMD, and may cause blindness within a relatively short time if not treated.

Giant cell arteritis is almost exclusively found in individuals over the age of 50. It causes a reduction in the blood flow to the structures of the head and neck (including the masticatory muscles and eyes). The decreased masticatory muscle blood flow causes the muscles to fatigue easily, producing a tired, cramped feeling that resolves within one to two minutes after use. Some TMD patients without giant cell arteritis may report similar symptoms, and these questions will help to differentiate the two disorders [61].

"Yes" to the first two questions suggests jaw claudication, but a patient with mild TMD symptoms may respond positively to both questions. Consider giant cell arteritis when a patient relates unexplainable scalp tenderness, unexplainable or unintentional weight loss, significant morning stiffness lasting longer than a half hour, and visual symptoms or visual loss [61].

A fever (previously asked about in the questionnaire) is also more prevalent among people who have giant cell arteritis [61]. If the fever is not due to a dental condition and has not been evaluated by a physician, it is recommended that the patient be referred for an evaluation. Another sign of giant cell arteritis is an abnormal temporal artery, which is evaluated by comparing the left and right temporal arteries. Relative to the other side, an abnormal vessel would be more visible, have no pulse, or have palpable nodes.

The onset of the disease is frequently abrupt and may be bilateral. A frequent complaint is a new headache and scalp pain that cause the patients to sit up in a chair all night, and local inflammation and tenderness in the

head or neck area [62, 64]. In a review of 390 reported cases, 59% complained of headache, and 31% complained of jaw pain or claudication (tiredness upon use) [63].

If a patient has had symptoms suggestive of giant cell arteritis for over a year, it is highly unlikely that he or she has giant cell arteritis. If you suspect a patient may have giant cell arteritis, it is recommended that (i) if the patient has any visual changes, he or she be seen by an ophthalmologist, rheumatologist, or emergency room immediately and (ii) if the patient does not have any visual changes, he or she be seen by an ophthalmologist, rheumatologist, or emergency room within a week (JE Zayac, personal commnication). It is better to err with an unnecessary referral than allow this disorder to go undiagnosed. Other potential causes for similar symptoms might be an intracranial hemorrhage, meningitis, encephalitis, and so on.

## Summary

It is extremely important to schedule adequate time to listen to the patient's history and symptoms; listening to patients enhances patient compliance and patient satisfaction with the management plan, decreases the likelihood of a malpractice suit, and is one of the greatest tools at the provider's disposal [65, 66].

Table 1.4 provides a list of histories and symptoms for which most general dentists would refer a patient with TMD-like symptoms to a practitioner with greater expertise.

**Table 1.4** Patient histories or symptoms for which most general dentists would refer to a practitioner with greater expertise.

- The patient previously received the therapies you traditionally provide, and the patient did not obtain satisfactory improvement.
- The patient received a TMJ Teflon-Proplast implant, Silastic implant, or TMJ prostheses, and you are unsure of the implant type or management.
- The patient has burning or electrical symptoms as the primarily quality of the pain complaint.
- The patient has a progressively increasing anterior open bite, thought to be from the TMJ(s) loosing vertical height due to severe TMJ osteoarthritis and/or idiopathic condylar resorption.

*Note*: A method for identifying practitioners with greater expertise is available on the book's website, "Practitioners with TMD Expertise and Fellowship Programs."

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