

Equipment Review: Headlights

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Issues this article will address

- Advantages and disadvantages of the various types of headlights available
- Choosing the most appropriate headlight based on practice requirements

Salient Points

- A headlight is a vital piece of equipment in accident & medical and general practice as it provides focused illumination to the area being examined and allows both hands to be free for other functions.
- Various types of headlights are available, including head mirrors, headlights on headbands, glasses with attached light sources ± magnifying lenses, and headlights with fibreoptic halogen lamps.
- Each type has advantages and disadvantages. Selection is based on the clinical setting and the specific use the headlight will be put to, and on

Key words: Headlights · Light sources · Purchasing decisions

Introduction

One of the most underutilised pieces of equipment in accident & medical or general practice is the headlight. It provides focused illumination to the area being examined and allows both hands to be free, instead of requiring one hand to hold the light source. In extracting a foreign body from an ear, for example, one hand can hold the pinna of the ear to improve access while a bright light covers the area in question, and the other hand can use forceps to grasp the foreign body.

There are, of course, other light sources that can be used such as standing lamps, auroscopes and ophthalmoscopes. The most obvious limitations of these light sources are either focusing light to the operative area, or one hand being occupied in providing the source of light. The light is not moving in the direction you are looking, and you have to change the direction of light manually as you focus to the field of operation.

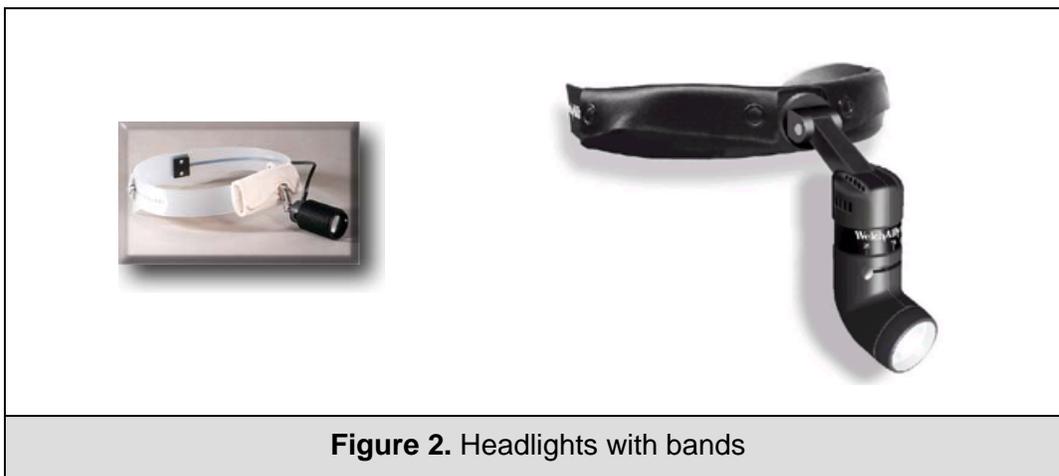
With advances in technology, there have been important improvements in the quality of light sources. While a simple flashlight on a headband may be quite adequate in most cases, the latest headlight models provide bright, white, shadow-free light which provides true colour reflection.

Types of Headlights

Previously, the most widely used type of headlight was a head mirror (Figure 1) which reflects overhead light onto the area of vision, and this piece of equipment is still used in some practices. Although it provides bright white light onto the area of focus, its principal limitation is the need for an overhead lamp and a fixed seat. As the patient moves, the overhead lamp also needs to move to give light an optimal angle of reflection to the field of vision. This may be suitable for a dentist or ENT surgeon where a patient is seated in one place and all the necessary equipment for the procedure is nearby.



Nowadays, the most commonly used headlight in accident & medical and general practices is a headband to which a light is attached via a universal joint (Figure 2). This type of headlight may either have a connection to an external power source, or it may have an internal power source in the form of a rechargeable battery. In my experience, an internal power source is much more convenient to use as movements are not hindered by the length of power cord. The only drawback is the diminished quality of light provided as the battery discharges. Consequently, it is important to maintain a good charge in the battery.



A variation on the headlight is glasses with a light source attached to the bridge between the two lenses (Figure 3, left). This can be useful for those who wear glasses and do not wish to have a tight band around the head. The only problem I have found with this type of headlight is the tendency for the glasses to slip forward because of the weight at the front. The Lumiview™ (Figure 3, right) is an advanced version of the headlight on glasses that has a magnifying lens built into the light source. The lens can be flipped up and down on the glasses as the need arises. The advantage of this instrument is a magnified visual field under illumination. This is very useful when looking for a small foreign body or performing delicate operative procedures.



Figure 3. Glasses with light source/magnifying lenses

Headlights with a fibreoptic connection to a halogen light source (Figure 4) are commonly used by surgeons who work in areas where an overhead light cannot provide clear illumination. Without doubt, this type of headlight provides the best quality of light to the visual field. Its main drawback is the cord connected to the light source. Although this is long enough to allow most procedures to be performed, it can be troublesome if the surgeon has to move from one place to another as the whole set-up needs to be moved to allow this. In accident & medical and general practice settings this lack of mobility is a limitation. This instrument is not cheap as it contains a fiberoptic cable and a halogen light source. Although it is nice to have an intense bright light on the focal area, there are cheaper and better alternatives on the market. The fibreoptic headlight is best suited for specialised fields of surgery.



Advances in technology have brought innovation to headlights as well. Enova Medical Technologies claim that their HALO surgical headlight system can provide a similar quality of light to halogen systems without a fibreoptic cable by using LED light. The rechargeable batteries are installed at the sides of headband and this allows the wearer total freedom of movement.

Conclusions: Making the Right Choice

A headlight is a piece of equipment that any individual medical practitioner should consider buying. Selection of the most appropriate headlight from the various types available should be based on the type of use that it will be put to and its affordability. An improved field of vision due to better illumination and possibly magnification, and the improved dexterity provided by having two hands available will make procedures quicker, more precise, and less tiring. The advantages and disadvantages of the various types of headlights are summarised in Table 1.

Table 1. Advantages and disadvantages of the various types of headlights		
Type	Advantages	Disadvantages
Head mirror	<ul style="list-style-type: none"> • Good quality light • Light to wear • Free to move 	<ul style="list-style-type: none"> • Have to adjust overhead lamp to get optimal reflection • Relatively fixed position
Headlight with headband	<ul style="list-style-type: none"> • Relatively cheap • Light to wear • Free to move 	<ul style="list-style-type: none"> • Quality of light depends on type of head lamp • Power cord may hinder movement • Low battery means poor light
Glasses with light source	<ul style="list-style-type: none"> • Convenient – no need for head band • Convenient for person who wears glasses 	<ul style="list-style-type: none"> • Tendency to slip forwards due to weight at front
Glasses with light source and magnifying lenses	<ul style="list-style-type: none"> • Magnified field of vision under illumination with better details 	<ul style="list-style-type: none"> • Tendency to slip forwards due to weight at front
Headlight with fibreoptic halogen lamp	<ul style="list-style-type: none"> • Best quality of light 	<ul style="list-style-type: none"> • Hindrance of movement by fibreoptic cord • Expensive • Heat from fibreoptic light can be uncomfortable