Lasers have been used for many years in oral surgery and implant dentistry. In some indications, laser treatment has become state of the art as compared to conventional techniques. This article is a comprehensive review of new laser applications in oral surgery and implant dentistry. One of the most interesting developments over the last years was the introduction of the 9.6-microm CO(2) laser. It has been shown in the recent literature that the use of this new device can preserve tissue with almost no adverse effects at the light microscopic level. In contrast, modifications of approved CO(2) laser therapies of premalignant lesions resulted in higher recurrence rates than the conventional defocused laser technique. However, several studies indicate that other wavelengths such as Nd-YAG (lambda = 1,064 nm) or diode lasers (lambda = 810 nm) may be also of value in this field. In many other indications, the use of lasers is still experimental. Intraoperatively used photodynamic therapy or peri-implant care of ailments implants with the CO(2) laser seems to be more of value than conventional methods. However, further studies are required to assess standard protocols. Over the past years, research identified some new indications for laser treatment in oral surgery and implant dentistry. Moreover, well-known laser applications were defined as state of the art. Nevertheless, further studies are required for laser treatment in oral surgery and implant dentistry.