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First of Its Kind Study Reveals Cost Differences Associated with Alternatives for Treating a Severely Damaged or Lost Tooth
Implant with Crown and Associated Procedures Found to be Most Costly Alternative

EAGAN, Minn. (March 22, 2006) – Delta Dental Plan of Minnesota (Delta Dental), a leading dental benefits provider, recently completed a study regarding the trends and costs comparisons associated with treating a severely damaged or lost tooth. On March 10, Delta Dental presented its findings at the 35th Annual Meeting and Exhibition of the American Association for Dental Research (AADR) in Orlando, Fla.

The study revealed the average initial cost of implants with crowns and associated procedures was the most expensive ($3,255), followed by three-unit bridges and associated procedures ($2,410), and root canals with crowns and associated procedures ($1,591). The study also uncovered a significant increase in the utilization of implants with crowns, a significant decrease in the utilization of three-unit bridges, and no significant change in the utilization of root canals with crowns.

“It is our understanding that this research is the first to explore these important issues,” said Dr. Richard Hastreiter, co-author of the study. “Because dental implants are a hot topic in dentistry today, these results generated significant interest from dentists and industry analysts when we recently presented our findings at the 35th annual AADR conference, because this kind of information simply hasn’t been previously available.”

Dr. Richard Hastreiter, dental director and vice president of oral health analytics at Delta Dental and Dr. Peilei Jiang, director of oral health analytics at Delta Dental, completed the study by utilizing data from dental claims submitted by Minnesota dentists for services provided to commercially insured patients from 1997 through 2004.

The study compared and analyzed trends and initial average costs associated with placement of implants with crowns in comparison to placement of three-unit bridges or root canals with crowns, and their respective associated surgical and/or restorative procedures. To view the study results, visit www.deltadentalmn.org

About Delta Dental Plan of Minnesota
An innovator in oral health benefit plans, Delta Dental Plan of Minnesota is an independently operated, nonprofit dental services company that administers self-insured
and prepaid dental service plans. Delta Dental serves more than 8,600 employer groups with more than 3.3 million members in Minnesota and across the nation. Delta Dental Plan of Minnesota is headquartered in Eagan, and has a customer service center on Minnesota’s Iron Range. For more information on Delta Dental Plan of Minnesota, visit www.deltadentalmn.org.

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Introduction

According to the American Association of Oral and Maxillofacial Surgeons, 69 percent of adults ages 35 to 44 have lost at least one permanent tooth to a traumatic injury, periodontal disease, failed root canal treatment or dental caries. The American Academy of Periodontology indicates that the four primary reasons for placement of dental implants include tooth loss due to periodontal disease, accidents/violence/injuries, tooth decay and not being satisfied with a previous tooth replacement option. Historically, the three-unit bridge has been the preferred option for the replacement of a missing tooth. During the past 30 years, research has demonstrated that osseointegrated implants are a viable alternative to three-unit bridges for replacing a missing tooth. Some observers have suggested that in certain situations a dental implant may be a more cost effective alternative than root canal treatment for a non-vital tooth. The objective of this study is to compare and analyze trends and initial average costs associated with the placement of implants with crowns in comparison to placement of three-unit bridges or root canals with crowns.

Methods

This study utilizes data from dental claims submitted by Minnesota dentists for services provided to commercially insured patients from January 1, 1997 through December 31, 2004. Standard descriptive statistical methods were used to retrospectively analyze dental claims data to compare trends and initial costs for implants with crowns, three-unit bridges, and root canals with crowns. Since a preliminary analysis indicated that various combinations of associated surgical and/or restorative procedures were integral components of the implant with crown, three-unit bridge and root canal with crown services, these surgical and/or restorative procedures were included in the final comparative cost analysis. Associated procedures include: for implants with crowns, various combinations of an implant abutment, bone graft, and extraction; for three-unit bridges, various combinations of core build-up; root canal treatment, and extraction; and for root canals with crowns, core build-up.

Results

Trends from January 1, 1997 to December 31, 2004 indicate a statistically significant increase in utilization of implants with crowns, a statistically significant decrease in utilization of three-unit bridges and no change in utilization of root canals with crowns (Table 1). From January 1, 2003 to December 31, 2004, 1,666 implants with crowns, 9,162 three-unit bridges, and 26,346 root canals with crowns were provided respectively to 1,159 patients (56 percent female), 8,875 patients (57 percent female) and 24,621 patients (56 percent female) (Tables 1 and 2). The mean ages of patients receiving these various services were significantly different. Patients provided three-unit bridges were oldest (50.4 years), followed by patients receiving implants with crowns (48.5 years) and patients treated by root canals with crowns (45.7 years) (Table 1). Average initial costs for implants with crowns, three-unit bridges, and root canals with crowns, and associated procedures, were: implants with crowns $3,255; three-unit bridges $2,410; and root canals with crowns $1,591. Average initial costs for implants with crowns, three-unit bridges and root canals with crowns, and various specific associated procedures, ranged for implants with crowns from $2,840 to $3,800, for three-unit bridges from $2,242 to $3,366, and for root canals with crowns from $1,457 to $1,672 (Table 2). From January 1, 1997 to December 31, 2004, implants with crowns and associated procedures showed the largest proportional average initial cost increase (83 percent), followed by root canals with crowns and associated procedures (47 percent), and three unit bridges and associated procedures (44 percent) (Figure 2).

Discussion

It is estimated that the use of dental implants in the United States is growing by approximately 10-15 percent per year and that the worldwide market for dental implant reconstruction could approach $3.5 billion by 2010. With appropriate case selection, dental implants have an overall five-year survival rate of greater than 90 percent and are often the most appropriate treatment option for replacing a missing tooth. Dental implants can provide various clinical and quality of life advantages compared to a fixed or removable prosthesis. Individuals who have selected a dental implant often indicate better satisfaction than patients with a removable prosthesis. However, the disadvantages of an osseointegrated implant come at increased financial cost. Dental implants are more expensive than the other principal single tooth replacement alternative, the three-unit bridge. The average initial cost of a single tooth replacement dental implant with a crown and associated procedures is on average 35 percent more expensive than a three-unit bridge and associated procedures, and 105 percent more costly than a root canal with a crown and associated procedures. In addition, the average initial cost of a dental implant with a crown and associated procedures is increasing at almost twice the rate of the three-unit bridge and associated procedures. Although the average initial cost of single tooth replacement dental implants with crowns and associated procedures is more expensive than other alternatives, the total lifetime financial costs of various single tooth replacement alternatives require further study. Additional research is needed to assess lifetime costs that include initial and maintenance costs, and future replacement costs associated with various alternatives. This research also should include an assessment of the value of the differential quality of life associated with each of these single tooth replacement alternatives.

Conclusion

From January 1, 1997 through December 31, 2004, there has been a significant increase in the utilization of implants with crowns, a significant decrease in the utilization of three-unit bridges, and no significant change in the utilization of root canals with crowns. The gender distributions for the utilization of implants with crowns, three-unit bridges and root canals with crowns were similar. The average age of patients provided three-unit bridges was oldest (50.4 years) followed by patients receiving implants with crowns (48.5 years) and patients treated by root canals with crowns (45.7 years). Significant cost differences were found among implants with crowns, three-unit bridges and root canals with crowns, and their respective associated surgical and/or restorative procedures. The average initial cost of implants with crowns and associated procedures was most expensive ($3,255), followed by three-unit bridges and associated procedures ($2,410), and root canals with crowns and associated procedures ($1,591).