Purpose: The study was to compare the usefulness of pre and post-operative antibiotics while strict asepsis was followed during periodontal surgery, and to evaluate the effects of peri-operative antibiotics on peri-oral skin microbial flora to detect its impact on S.aureus from the nares of patients involved.

Materials and Methods: The prospective, randomized controlled clinical trial consisted of two groups of 40 patients each with full or partially edentulous jaws. The antibiotics group consisted of 23 men and 17 women, aged ranged from 27-82 yrs. They received 128 implants and oral amoxicillin 1g, 1h pre-operatively, and 2g for 2 days post-operatively. The Non Antibiotics Group consisted of 20 men and 20 women aged ranged from 26-88yrs received 119 implants and no antibiotics. Bacterial samples were taken from the peri-oral skin before and at the end of the surgery. In 12 patients in each group samples were taken from the nares. A visual analogue score questionnaire was evaluated for symptoms of infection / inflammation by both the patient and the periodontologist at suture removal.

Findings: There was no significant difference between the antibiotic group and the non antibiotic group in respect to aerobic and anaerobic peri-oral bacteria from the peri-oral skin, sterile drapes and from the nares. S.aureus was detected in one patient from the nares in the non antibiotics group. The patients’ subjective perception of post operative discomfort was significantly smaller in the group receiving antibiotics.

Conclusions: Antibiotics do not provide significant advantages when proper asepsis is applied concerning post-operative infections and do not reduce peri-oral microbial contamination. It does show reduced post operative discomfort when peri-operative antibiotics were given.
Purpose: To investigate whether previously plaque-contaminated rough surfaces can re-osseointegrate after decontamination.

Materials and Methods: 4 beagle dogs were used in this study. The lower premolars were extracted on both sides of the mandible and allowed to heal for 3 months. Following the healing period, an incision was made on the left side of the mandible form the canine to the first molar. Full-thickness mucoperiosteal flaps were raised. 3 3.75X10mm Nobel Ti-Unite implants were placed in a position allowed some supragingival thread exposure. Following suturing, the number of supragingival threads were counted. Implants were allowed to heal for 5 weeks to allow adequate plaque accumulation. After the initial 5 week healing period, implant sites were prepared on the right side of the mandible as mentioned earlier. Implants were exposed and the contaminated parts were cleaned with either: swabbing with citric acid for 30s on a cotton pellet followed by rinsing with saline; cleansing with a toothbrush and saline for 1 min; or swabbing with 10% hydrogen peroxide on a cotton pellet for 1 min followed by rinsing with saline. Immediately following cleansing, the buccal plate was removed and the implant was reversed out followed by placement in the contralateral side. Implants were placed flush with the alveolar ridge. One control implant was also placed. After an 11 week healing period, animals were sacrificed and block sections made for histometric study. Analysis was carried out on 3 areas of each implant: part exposed to oral cavity, part exposed to gingival tissue, and part in bone. Both BIC and percent of area of bone formation within the threads was calculated.

Findings: All forms of treatment resulted in direct BIC on the portion of the implant previously exposed to the oral cavity. Although osseointegration did occur, the amount of BIC and bone area within the threads was decreased in the previously contaminated area of the implant. No significant difference was noted between the 3 types of treatment modalities.

Conclusions: In the beagle dog model, rough surface implants previously contaminated by bacterial plaque can be re-osseointegrated following cleansing.

**Purpose:** To evaluate the influence of the crown-to-root ratio (C/I) ratio and different implant prosthetic treatment modalities on crestal bone loss around non-submerged dental implants placed in the posterior region.

**Materials and Methods:** 83 systemically healthy, partially edentulous adult human subjects participated in this prospective longitudinal clinical and radiographic study to ascertain the success rates of ITI implants placed in the posterior maxilla or mandible. In all, 192 implants were placed and subsequently examined over a 10-year period. Implants were restored following a healing period of 3-6 months using different prosthetic treatment modalities: implant-supported fixed partial dentures (n=156); single-tooth restorations (n= 26); implant-tooth supported fixed partial dentures (n=10); cantilever extension (n= 53) vs. non-cantilever extensions (n=139); and cemented prosthesis (n=138) vs. screw-retained prosthesis (n= 54). Clinical and radiographic (using the long-cone technique) parameters were obtained at baseline, at 1-year recall, and at every 2 years thereafter. Periapical radiographs were collected to record peri-implant bone loss by measuring 1) the anatomical crown length, 2) the anatomical implant length, 3) the crestal bone level, 4) AC/I ratio (anatomical crown-to-implant), 5) CC/I ratio (clinical crown-to-implant), and 6) the annual crestal bone loss. Implant restorations were classified into 1 of three groups according to their CC/I ratio: a) 0-0.99 (n= 8); b) 1-1.99 (n=133); and c) > 2 (51).

**Findings:** Both AC/I and CC/I ratios were noted to have an inverse relationship with the annual crestal bone loss. In other words, implants restorations with a high C/I ratio displayed less crestal bone loss compared to implant restorations with low C/I ratios. Implants from the Group A showed an annual crestal bone loss of 0.34 mm while implants from Group C showed an annual crestal bone loss of 0.02 mm. Furthermore, of the 51 implant with a C/I ratio of 2 or greater, only three implants failed over the 10-year period. This translated to a cumulative survival rate of 94.1%. These findings would contradict previous studies that reported that implants with a high C/I ratio were contraindicated in the posterior areas of the mouth. In regards to different prosthetic treatment modalities, no statistically significant correlations could be made between annual crestal bone loss and different prosthetic treatment modalities.

**Conclusion:** Implants with high C/I ratio did not appear to have a significant risk of crestal bone loss compared to implants with a low C/I ratio. Also, the use of one-tooth cantilever extensions, tooth-implant supported fixed partial dentures, and different modes of prosthesis retention or single tooth-restorations did not seem to affect crestal bone stability.

**Purpose**: to explore the effect of implant surface roughness on the pace of peri-implant bone formation and to evaluate whether well-controlled loading affects this process.

**Materials and Methods**: Two sets of six mature female New Zealand white rabbits were used. The bone chamber model with the following four experimental conditions were used: Experiment 1: rough (test) implant, no mechanical loading. Experiment 2: turned (control) implant, no mechanical loading. Experiment 3: rough (test) implant, mechanical loading. Experiment 4: turned (control) implant, mechanical loading. Each of the four experiments lasted for 6 weeks. Peri-implant tissue samples are examined histologically and histomorphometrically.

**Findings**: The histological sections revealed a healthy tissue inside the bone chamber, consisting mainly of bone tissue. The bone was generally formed by bone apposition from the host bone growing into the chamber via the perforations into the bone chamber. The proportion of bone relative to all tissues in the bone chamber (BAF) did not differ statistically between the experimental conditions. The bone fraction (BF), representing the bone density, was higher around the loaded compared with the unloaded implants. This difference was only significant between the loaded test implants and the unloaded implants. The fraction of bone in the 100 mm zone around the loaded test implants, however, was significantly higher than the other experimental conditions.

**Conclusions**: Implant loading did not affect bone formation in the absence of surface roughness, and implant surface roughness had no effect in the absence of loading.

**Purpose:** To tell the long-term results of immediate implant placement at the maxillary molar extraction socket and presents a treatment protocol.

**Materials and Methods:** A total of 391 rough surface implants were placed in 386 pts. at the time of maxillary molar extraction. Teeth were extracted by raising flap and care was taken to preserve inter-radicular bone. Depending upon the bone ht. and width of inter-radicular septum, the osteotomy was prepared using sequential osteotomes. A wide inter-radicular septum defined as a septum that encases rough surface of inserted implant. When sufficient bone ht. and wide inter-radicular septum present, tapered osteotome used till 4.2 mm diameter and tapered or parallel implant with apical diameter of 4.8mm and 6.5mm at platform inserted. When sufficient bone ht. and narrow inter-radicular width present, osteotome used till 3.5mm diameter and tapered implant with 4.0mm apical dia. and 6.5 mm platform dia. Inserted. When insufficient bone ht. and wide inter-radicular septum present, tapered osteotome used till 4.2 mm dia. used within 1 mm from sinus floor. A tapered end implant with 4.8 mm apical dia. and 6.5 mm platform dia. inserted. When insufficient bone ht. and narrow inter-radicular septum present, tapered osteotome used till 3.5 mm within 1mm from sinus floor. A tapered –end implant with 4.1mm apical dia. and 6.5mm platform dia. was inserted. Regenerative therapy was performed when horizontal defect was >3mm. In all of the above scenarios osteotomy was prepared in inter-radicular bone.

**Findings:** A total of 389 out of 391 implants were functioning successfully for up to 75 mos. with a cumulative success rate of 99.5%. Criteria for determining implant morphology and dimension was presented.

**Conclusion:** Implant placement at the time of maxillary molar removal with concomitant regeneration as needed and restoration with unsplinted crowns is a predictable treatment modality.

Purpose: To propose a hierarchy for treatment selection following tooth extraction, based upon examination of the literature, and extrapolation of these results to a variety of clinical scenarios faced by clinicians on a daily basis.

Materials and Methods: Review article.

Findings: A clinically-based hierarchy of treatment selection following extraction of a single rooted tooth is proposed, based upon the available literature and clinical experience. The following are several important statements made by the author. 1) The response of the hard and soft tissues with regard to resorption and recession is, in large part, governed by the patient phenotype. Thinner, more highly scalloped hard and soft tissues will be more prone to exhibit post-surgical hard tissue resorption and soft tissue recession than the less thicker, less scalloped phenotype patient. 2) If an implant cannot be primarily stabilized in the residual extraction socket in an ideal prosthetic position, immediate implant placement should not be considered. The use of particulate materials and bioabsorbable, non-resorbable, or reinforced bioabsorbable membranes at the time of extraction will result in less postextraction loss of alveolar ridge height and width than the failure to place regenerative materials at the time of tooth removal. 3) No advantages of autogenous grafts over biocompatible, bioabsorbable, non-autogenous material other than speed of regeneration have been demonstrated in the literature. 4) The individual esthetic zone for each patient must be determined through consultation and discussion. 5) If a horizontal buccal ridge defect $\geq 5$ mm in its mesio-distal dimension is encountered, and the mesial and or the interproximal bone has been affected, no implant is placed at the time of extraction.

Conclusions: Adequate information exists for formulation of a clinically based hierarchy and its utilization to help maximize the predictability of the functional and esthetic outcomes of therapy.

Purpose: To retrospectively demonstrate and measure the outcomes of dental implant treatment without antibiotic prophylaxis.

Materials and Methods: The study design represented a retrospective analysis of 736 implants placed in 437 patients from January 2000 to December 2005. Patients with edentulous or partially edentulous mandibles or maxillas were provided implant therapy by the same oral maxillofacial surgeon. All implants were placed according to the manufactures recommendations depending on the system utilized for therapy. After surgery, all patients received an anti-inflammatory medication consisting of either nimesulide 100 mg 2x a day or Arnica Montana 5C 3 x a day for 3 days postoperatively. No antibiotic prophylaxis was provided to the patients. Healing of the implants was evaluated after 6 months at the time of prosthetic rehabilitation. Implant failure was defined as a removal of the implant due to either signs of infection or nonosseointegration of the implant.

Findings: Few early complications were observed. Postoperative edema and swelling were seen for 3 to 4 days (considered normal postoperative events by the authors). 5 implants (0.68%) in 5 patients demonstrated symptoms of early infection (infection occurring within 1 week), and 3 implants (0.41%) in 3 patients exhibited late infection (infection occurring from 1 week to the time of abutment connection). These implants were removed prior to prosthetic treatment. A total of 20 implants (2.72%) in 20 patients failed secondary to nonosseointegration and had to be removed; these included 7 implants (0.95%) in the maxilla and 13 (1.77%) in the mandible. In this same group of 20 patients, 15 received other implants at the same time which did not fail.

Conclusions: Within the limitations of this study, the implant survival rate in the study sample (96.2%) was no lower than the high success rates reported in the literature using various antibiotic regimens. According to the authors, the use of antibiotics for implant placement does not appear to be as beneficial as previously thought. If antibiotics are to be used, they should only be considered in patients who are immunocompromised and are undergoing extensive dentoalveolar surgery.
Purpose: The purpose of this study was to evaluate whether or not implant site preparation by means of osteotomes instead of drilling may improve peri-implant bone density and/or osseointegration and whether or not this surgical approach may increase the predictability of immediate loading of single-tooth implants.

Materials and Methods: Six adult dogs were used in the study. The second, third, and fourth mandibular premolars were extracted bilaterally in each dog. After 3 months 4-3.3 x 10mm Straumann SLA implants were placed in each side of the mandible. In 3 animals, the implant sites were prepared by means of osteotomes, while in the remaining 3 standard stepwise drilling was used. In each jaw 2 non-adjacent implants were restored with single crowns 4 days after placement while the remaining 2 were left as non-loaded controls. After 2, 4, and 12 weeks of loading animals were sacrificed and block samples were taken and prepared for histologic evaluation. Implant stability (ISQ) was also evaluated by means of a resonance frequency analysis system immediately after surgery, immediately before crown placement, and immediately before tissue-block sampling.

Findings: All of the osteotome implants were lost. Five were lost within the first 4 days and the rest were lost after they were loaded. None of the implants placed with drilling were lost during the study. Osteotome implants at the time of placement had an ISQ of 77.6 and 72.6 at the time of crown placement. Drilled implants had an ISQ of 74.6 at surgery, 75.7 at crown placement, 78.2 at 2 weeks, 84.6 at 4 weeks, and 76.5 at 12 weeks. Histomorphometric analysis showed similar soft and hard peri-implant tissue characteristics at immediately loaded and non-loaded implant at all observation times. Generally a larger percentage of bone was found around non-loaded implants when compared to loaded implants at all time intervals. Furthermore average bone to implant contact was 59-72% at immediately loaded implants and 60-63% at non-loaded implants.

Conclusion: The preparation of the implant site by means of the osteotome technique used in this study had a deleterious effect on osseointegration, while immediate loading of single free-standing, SLA implants following a conventional surgical protocol did not jeopardize their osseointegration.
Purpose: To assess the 1-year survival of delayed vs. immediately loaded implants as well as to assess the risk factors associated with implant failure.

Material and Methods: This was a retrospective cohort study of 855 patients who had Bicon implants placed in a private practice. Subjects were categorized into 2 categories based on their loading as immediate (right after implant placement) or delayed (3 – 6 months after implant placement). The primary predictor variable was the type of loading (immediate vs. delayed) and the secondary predictor variables were age, gender, tobacco use, implant location, quality of bone, implant and abutment size, and surgical procedure (GBR, sinus augmentation etc). The outcome variable was implant failure and was recorded in months. Data were analyzed using the COX proportional hazards model.

Findings: Immediate-loading group was more likely to be associated with anterior maxilla, with hydroxyapatite-coated implants, 3 mm wells, and less likely to be associated with a dentoalveolar reconstruction procedure. The immediate loaded implants were 2.7 times more likely to fail in 1 year, compared to delayed loaded implants. The other factors significant in determining implant survival included use of tobacco (HR=2.6), maxillary region (HR=1.9), and length of the implants (HR=1.3).

Conclusions: Implants that were immediately loaded were more likely to fail compared to the delayed loaded implants.

Purpose: The purpose of this study was to determine the consequence of early cover screw exposure on peri-implant marginal bone level.

Materials and Methods: Twenty-three patients treated with partial edentulism, 14 in a two-stage approach and 9 with one stage approach. Sixty Astra Techs MicroThread implants (AstraTech, Molndal, Sweden), were placed between 2004 and 2005, implants were placed by the same surgeon. The top of the implant was placed at or below the bone level, according to the protocol a two stage approach was applied (1) If the patient wished to wear the removable denture during healing, (2) economic reasons, (3) if primary stability was no obtained at time of placement. Radiographic assessment was obtained with digital intra-oral radiographs with paralleling technique, at implant placement and after abutment placement. X rays were magnified and bone loss was measured mesially and distally.

Findings: Mean bone remodeling was 1.96mm around the two-stage exposed implants, 0.01mm around the two stage submerged implants and 0.14mm around the one stage implants.

Conclusions: Early exposure of an implant during submerged healing results in a significantly higher bone loss compared with one and two stage submerged implants.

Purpose: The primary objective of this systematic review was to determine the efficacy of the sinus augmentation procedure and compare the results achieved with various surgical techniques, grafting materials, and implants.

Materials and Methods: The paper is a systematic review of databases, published papers, and unpublished data. 
Focused question: In patients requiring dental implant placement, what is the effect on implant survival of maxillary sinus augmentation versus implant placement in the non-grafted posterior maxilla? 
Search protocol: Search of online databases, hand searches of various journals and bibliographies of all relevant papers and review articles and personal communications for unpublished data were used as part of the search protocol. 
Selection criteria: Inclusion criteria: Human studies with a minimum of 20 interventions, a minimum follow-up period of 1-year loading, an outcome measurement of implant survival, and published in English, regardless of the evidence level, were considered. Exclusion criteria: Studies involving multiple simultaneous interventions (e.g., simultaneous ridge augmentation) and studies with missing data that could not be supplied by the study authors were excluded. 
Data collection and analysis: Where adequate data were available, subgroups of dissimilar interventions (e.g., surgical techniques, graft materials, implant surfaces, membranes) were isolated and subjected to meta-regression, a form of meta-analysis.

Findings:
1. Forty-three studies, 3 randomized controlled clinical trials (RCTs), 5 controlled trials (CTs), 12 case series (CS), and 23 retrospective analyses (RA) were identified. Thirty-four were lateral window interventions, 5 were osteotome interventions, 2 were localized management of the sinus floor, and 2 involved the crestal core technique.
2. Meta-regression was performed to determine the effect of the variables of block versus particulate grafting techniques, implant surface, graft material, and the use of a membrane over the lateral window.
3. The survival rate of implants placed in sinuses augmented with the lateral window technique varied between 61.7% and 100%, with an average survival rate of 91.8%. For lateral window technique:
4. Implant survival rates reported in this systematic review compare favorably to reported survival rates for implants placed in the non-grafted posterior maxilla.
5. Rough-surfaced implants have a higher survival rate than machine-surfaced implants when placed in grafted sinuses.
6. Implants placed in sinuses augmented with particulate grafts show a higher survival rate than those placed in sinuses augmented with block grafts.
7. Implant survival rates were higher when a membrane was placed over the lateral window.
8. The utilization of grafts consisting of 100% autogenous bone or the inclusion of autogenous bone as a component of a composite graft did not affect implant survival.
9. There was no statistical difference between the covariates of simultaneous versus delayed implant placement, types of rough-surfaced implants, length of follow-up, year of publication, and the evidence level of the study.

**Conclusions:** Study quality was deemed poor as only 8 out of 43 studies were RCTs. The review identified one rigorous study by Boyne et al., on rhBMP-2/collagen sponge implants demonstrating similar results as autogenous bone grafts or composite grafts containing and autogenous component. Insufficient data were present to statistically evaluate the effects of smoking, residual crestal bone height, screw versus press-fit implant design, or the effect of implant surface micro-morphology other than machined versus rough surfaces. There are insufficient data to recommend the use of platelet-rich plasma in sinus graft surgery.

Purpose: To investigate bone graft regimens used for sinus lifting procedures and to present long-term implant success rates in areas where maxillary sinuses were grafted with these materials. Factors that may positively or negatively affect the long-term success rate will also be addressed.

Materials and Methods: 257 consecutive patients with 625 implants were evaluated retrospectively. 2 phases were involved in this study: Phase 1 dealt with the grafting of 188 sinuses using either (1) autograft alone, (2) autograft + demineralized freeze-dried bone allograft (DFDBA) + absorbable hydroxyapatite (AHA) in a ratio of 1:3:3 or (3) DFDBA + AHA + nonresorable HA (NHA) in a ratio of 1:1:1. Phase 2 dealt with using graft option (3) in another 69 patients. The factors that were evaluated were the type of graft combination used, the implant surface texture, as well as whether the implant was an immediate or delayed placement.

Findings: Phase 1 results showed that graft combination (3) had the lowest implant failure rate at 2.7%, with combination (2) being second at 14.3%, followed by combination (1) at 44.4%. 3.6% of the total number of implants placed failed. The smooth implants had the highest failure rates at 21.8%, with the titanium plasma-sprayed implants next at 2.9%, followed by HA-coated implants at 0.7%. Phase 2 results showed that the overall implant survival rate was 92.5% after 3 years. Again, smooth implants showed the highest failure rate at 41.8%, with the sand-blasted, large-grit, acid-etched implants next at 6.8%, followed by the HA-coated implants at 3.4%.

Conclusions: The combination of DFDBA + absorbable HA + nonabsorbable HA significantly improved stability of the augmented bone and implant survival rates in these areas. Implant surface texture in augmented sinuses areas seems to play an important role in survival rates. Implants with rough surfaces may be a preferable choice. An increased failure rate should be expected when implants are placed simultaneously with sinus augmentation.