Clinical Realities

July 2002

IMPLANT NEWSLETTER FOR CLINICIANS

From the treatment records of Paul P. Binon DDS, MSD

IMPLANTS HAVE ARRIVED

A recent issue of the CDA Journal devoted an entire issue to dental implants. The banner headline was that Implants had Arrived. Rather funny I thought since many of us have been restoring and / or placing implants for almost 20 years. Just where did they come from, and why did it take so long to discover that they were in fact here. Maybe, the little suckers were smuggled into the US in Swedish Meat Ball Jars! Fact is that dental implants have been around a very long time. Implants based on real science only about 30 years in Europe and since 1982, in North American. Discovery and development took place primarily in Sweden, Switzerland and Germany. Once introduced into the US,manufacturers multiplied, innovation flourished and the rest is history. Last count there were more than 90 different implants available in the US alone. World wide the selection, including knock offs, approximates 300 to 400.

What the journal was telling us is that implant dentistry is now **mainstream treatment**. It should be considered whenever a treatment plan is developed and the patient should have the opportunity and the right to decide if they want to pursue that type of treatment.

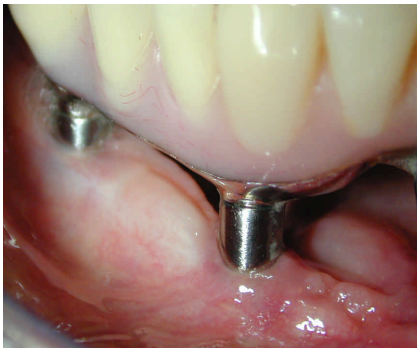
It is therefore incumbent on all practitioner to know what is possible. The opportunity to solve difficult problems with dental implants is unlimited. It is limited only by the imagination and the skill of the practitioner. If you knew all the facts, what would you want for yourself and your loved ones? The answer is easy once you have the knowledge to make an educated determination.

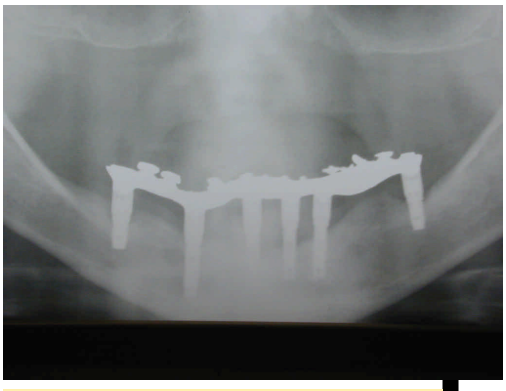
First BAB Implant Case.

The first patient to receive Branemark implants dates back to 1983. He was treated with five 3.75 mm implants and a bone anchored bridge (BAB). His bite relationship is Class III and the implants are lingually inclined. The distal cantilever extensions were quite generous and his home care was less than optional. Two years after completion he fractured 4 abutments and lost one implant. Two short distal implants were added to support the long cantilevers and the frame was modified. He maintained his recall appointments for a few more years and then was totally lost to recall. He returned to my office just a few months ago for a re-exam because the occlusal surface of the BAB had worn down making it difficult to chew. The vertical dimension of the lower 1/3 of the face had changed as well.

The BAB was removed and each implant tested. The abutment screws were checked and several gold prosthetic screws required replacement. After 19 years of function, all implants are still well integrated with only the midline implants showing a small amount of bone loss. It was interesting to note how the bone has become much denser around the implants and the loading area. It is graphic validation of Wulffs Law. Virtually all the BAB patients in my practice demonstrate evidence of increased bone density. During the past 19 years, I have completed approximately 200+ BAB's with only one known

failure. This type of restoration is unquestionably one of **the most predictable long term prosthesis in dentistry today**.





The impossible is quite possible. It just takes a little longer.

anonomous

Advanced Maxillary Atrophy Implant Reconstruction

Upper denture patients with lower anterior teeth often present with advanced atrophy of the maxillary arch in general and the anterior ridge in particular. This deterioration is further exacerbated with inadequate posterior support and ill fitting dentures. Typically, there is considerable anterior mobile tissue and the residual bone has resorbed to the base of the nasal spine. In these advanced cases, the denture seats upward on closure and the base of the nose moves slightly. The maxillary tuberosity also progressively moved downward and the sinuses enlarge dramatically. Combination syndrome patients are extremely difficult to treat. Historically, the mobile tissue has been surgically removed with a vestibuloplasty or allograft material, in the form of blocks or mesh pouches, have been tunneled into the mobile tissue to attain a stiffer ridge. Implant reconstruction however, offers a more viable solution that is very predictable. The treatment of two patients demonstrating this type of advanced atrophy are presented.

Patient #1.

Forty three year old female presented who was edentulous in the maxilla for 15 years, with lower remaining teeth #'s 19, 20, 22, 23, 24, 25, 26, 27, and 28. Crowns were present on 19 and 20 along with a three unit cantilever bridge extending from 27,28 replacing 29. Cervical caries were present on the existing restorations. Premaxillary atrophy was present down to basilar bone and the nasal spine. Patient reported a previous effort to graft the anterior ridge had been unsuccessful. The upper denture was unstable with a significant A/P rock, and the lower anteriors had overerrupted progressively as anterior support dwindled. The occlusal plane sloped apically with minimal posterior inter arch space. The cervicals of the lower anterior teeth were visible with the lower lip at rest. The VD was over-closed approximately 6 mm.; no maxillary teeth were visible and upper lip support was inadequate. As a result of the combination of all these factors, in profile, it appeared that she had a Class 3 jaw relationship. Her periodontium was intact with minimal pocket depth along with localized minor mucogingival problems.

Patients primary treatment objectives were to obtain a stable functional upper denture and a cosmetic improvement. In non technical terms, she described wanting her lower face to be restored to proper size, to show upper teeth when she smiled, to have an upper lip again and to have the upper teeth remain secure in her mouth when she smiled, laughed and ate. She was also self conscious of her appearance and was reluctant to smile.

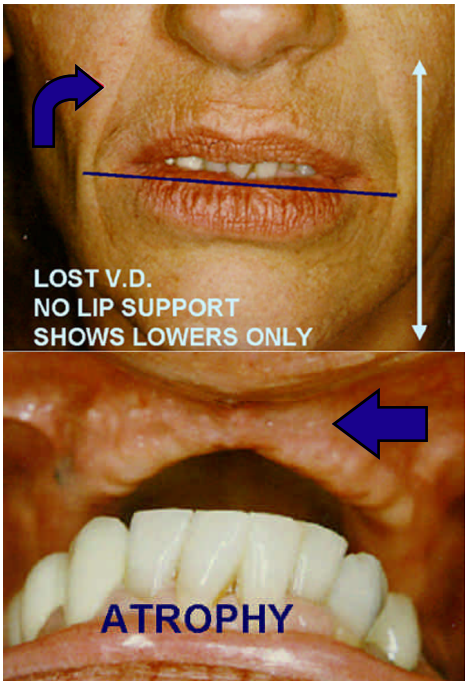
Treatment considerations:

Mounted cast were obtained. A diagnostic denture wax up indicated that the vertical had to be opened 6 mm, the lower anterior teeth had to be shortened about 5 to 6 mm, the posterior plane of occlusion had to be raised approximately 4 mm. The maxillary anterior teeth also had to be brought forward in order to obtain adequate lip support and a pleasing smile line. Radiographic evaluation indicated that the sinuses were very large with minimal overlying bone, that the anterior ridge had totally resorbed and offered no sites for implant placement, that the incisors had calcified canals and sufficient root length to permit radical reduction. Treatment plan consisted of bilateral sinus grafts, the placement of 4 implants on each side of the maxilla distal to the cuspid area, and a bar retained over denture. In the lower arch, aggressive crown lengthening from bicuspid to bicuspid, PFM crowns on all teeth, along with a unilateral distal extention partial denture.

Treatment sequence:

Bilateral sinus grafts were completed using 50% autogenous bone harvested from the ascending ramus and 50% PepGen15 in combination with platelet

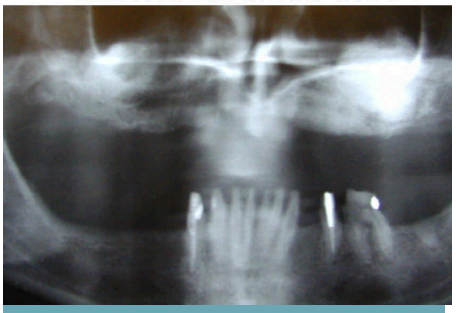
Patient #1



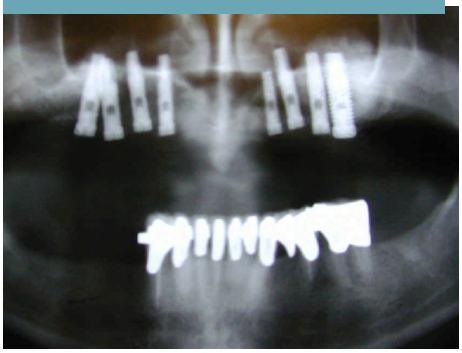
SEVERE ANTERIOR BONE LOSS AND MOBILE TISSUE

PRE TREATMENT PAN X RAY

BILATERAL SINUS GRAFT



IMPLANTS IN PLACE



from the ascending ramus and 50% PepGen15 in combination with platelet sequestration gel. Immediately thereafter, the patient had crown lengthening / bone recontouring of the lower anterior teeth. Seven weeks after the periodontal surgery, provisional crowns were placed on all the lower teeth to the corrected incisal height and occlusal plane. An interim upper denture was constructed to evaluate tolerance to the increased VD and the cosmetic changes planned. Approximately five months after grafting, eight implants were placed. Since a full arch bar was to be constructed, standard threaded Lifecore RBM hex top implants were utilized. During the integration period, the lower arch treatment was completed. Approximately five months after implant insertion, second stage surgery was initiated and an impressions were obtained to construct the bar. A verification jig was constructed and tested in the mouth. The cast frame was then constructed and inserted for try-in. After validation of fit, a cast super structure was made and tested in the mouth. The denture try-in was then transferred onto the super structure and tried in the mouth for esthetic, phonetic, occlusal contact and lip support. The upper was then processed and inserted.

Sequential photos of the before and after are presented. Patient is very pleased with the stability of her upper prosthesis and extremely happy with the dramatic overall pleasing cosmetic effect. All her expectations have been met.

Patient #2.

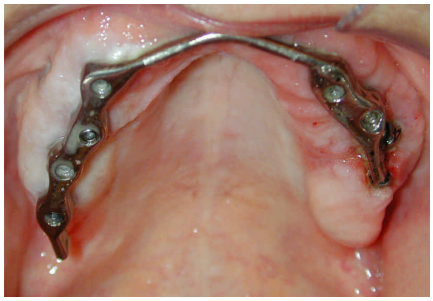
Sixty three year old male, edentulous for 24`years in the maxilla with 6 remaining lower anterior teeth presented for restoration. The denture showed extensive wear, missing and fractured posterior teeth. It was ill fitting with an A/P rock, and no retention. Five of the six lower teeth had crowns with failing margins, caries, inadequate embrasure spaces, and poor esthetics. The removable partial denture had broken clasps and was ill fitting and non-retentive. His upper ridge was moderately atrophic with mobile anterior tissue and large pneumomized sinuses. The anterior ridge although adequate in vertical height, was very narrow and hourglass shaped. The lower posterior edentulous area demonstrated advanced atrophy with sharp spiny ridges. Periodontal probes were 2 to 4 mm with slight bleeding. Plane of occlusion was reversed due to significant bone loss on the lower distal extension areas. Vertical dimension was WNL and there was a CR/CO discrepancy.

Patients primary treatment objectives were to obtain a stable, non mobile upper denture, elimination of palatal coverage, better esthetics (show more tooth), and a retentive, comfortable lower partial.

Treatment considerations: Panographic film indicated that there was insufficient bone in the posterior to support implants. Treatment plan consisted of bilateral sinus grafts, the placement of 4 implants on each side of the maxilla distal to the cuspid area, and a bar retained over denture. The posterior maxilla is more desirable for implant placement for a number of reasons. Typically, anterior implant placement encroaches on the esthetic zone (between 6 and 11), when bar size and tooth location are factored in. With a thin pre-maxilla, a ridge split could be considered. However, when 5 or 6 implants are placed under those conditions the risk of non integration increases. The posterior area affords better alignment (less angulation), better loading parameters, the placement of longer implants, and better distribution of retentive features. On the lower arch implants were also considered, however, due to the significant amount of bone loss, bilateral block grafts or nerve repositioning would have to be part of the treatment plan. As an alternative, a retentive / stable partial denture could be achieved by splinting the two terminal teeth on each side. As a retentive mechanism, the terminal crowns would have male Dalbo attachments to distal compression of the tissues without overloading the abutments. These attachments offer excellent retention and esthetics as well as lateral stability.

Treatment sequence:

Bilateral grafts were accomplished using autogenous bone, PepGen15 and platelet sequestration gel. The old dentures were were severly relieved and modified by removing the buccal flanges distal to 6 and 11 and relined with

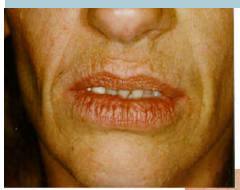


MILLED CAST BAR WITH 2 HADER CLIPS AND TWO PASSIVE PLUNGER ATTACHMENTS

CAST SUPERSTRUCTURE, RETENTIVE FEATURES AND PROCESSED RESIN

COMPLETED IMPLANT SUPPORTED UPPER DENTURE. LOWERS RESTORED WITH

POST OP SMILE, IMPROVED LIP SUPPORT, MORE VISIBLE UPPER TEETH LESS VISIBLE AND SHORTER LOWER TEETH,



BEFORE

AFTER

Viscogel. During the graft maturation period, lower arch treatment was completed, placing PFM crowns on all 6 teeth, the laterals and cuspids being splinted. At five months, 8 implants were placed in the maxilla. 5 months later the implants were uncovered. At the same appointment, a full arch impression was taken. Healing abutments were placed, tissue sutured and the denture modified. Three weeks later, a verification jig was tested in the mouth, vertical and centric were recorded and a definitive retentive bar was made. Due to the limited vertical height and the desire for exceptional retention, Locator attachments were used. Bar was milled and tried in the mouth. With fit verified, a superstructure was cast. The centric relation and verical were verified and the denture set up was transferred to the superstructure. Another try in and then the denture was processed to completion. During over-denture construction, the lower partial was also completed.

Completed treatment gave the patient more visible teeth, a better smile line, improved overall lip support, and very stable and retentive prosthesis with minimal tissue coverage. It takes two hands and twenty pounds plus to remove the upper denture. The RPD is also very retentive and virtually no movement in any direction is experience during testing and function.

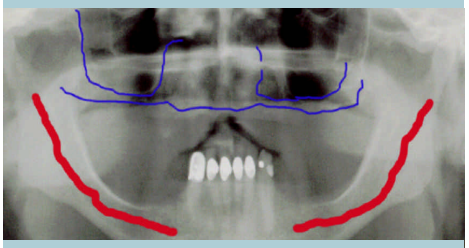
Both of these patients had similar circumstances and needs. A comprehensive well executed surgical and restorative treatment plan returned both to normal function and pleasing esthetics.

BLOCK GRAFTS

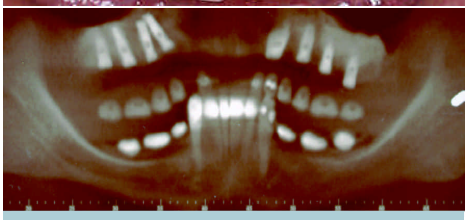
When significant bone deficiencies are present, particulate grafts are considerably less predictable than block grafts. There appears to be considerable misinformation relative to the availability and application of this type of graft procedure within our geographic area. This was brought to mind recently when a new patient told me that “pelvis grafting” was only available in San Francisco and that it cost $50,000 dollars and she would not be able to walk for weeks. My friend, Dr. Mike Pikos has been advocating and teaching block grafting techniques for many years. The success rate for this type of procedure is very impressive and the surgical sequelae are minimal. A variety of harvest locations are available depending on the amount of bone required to reconstruct the deficient area and it is not necessary to have this done in a hospital setting. Even hip harvesting can be done in a private surgical office by a properly trained oral surgeon.

An application is exemplified by a recently completed case. The patient presented with primary complaints of chronic severe pain of the left posterior mandible, a feeling of numbness and that his jaw “moved” during function. He also wanted a crown on the broken tooth on that side of his jaw. His dental / medical history indicated that he had been a trauma victim on Dec. 21, 2000. He was treated for fractures of the maxilla, the mandible and the left orbital rim in a hospital by an ENT physician. The fractures were reduced with internal closed reduction. He was seen in April of 2001 for examination in my office. Assessment relative to the mandible included: Incomplete fusion of the mandibular fracture, fractured molar (# 19) in the fracture site, multiple endodontic lesions, temporomandibular joint adhesions and functional restrication, occlusal disharmony, caries and enamel fractures. The preoperative films clearly demonstrate the status of the fracture zone. Immediate treatment consisted of antibiotic, removal of #19 and 20. In order to reduce the mandibular fracture, a block hockey stick bone graft was applied to the defect. Cancelous autogenous bone filled in the remaining continuity defects. The mandible was fixated with a bar and arch wires. Post surgical radiograph documents the repair. After initial healing, implants were placed in sites 19 and 20. Threaded Frialit-2 implants, 5.5 and 6.5 mm in diameter were selected to provide maximal biomechanical stability and an ideal emergence profile. Completed restoration is illustrated. Functional exercises have increased opening range and although the left mandibular nerve was anesthetic at the start of treatment, some sen-

Patient # 2

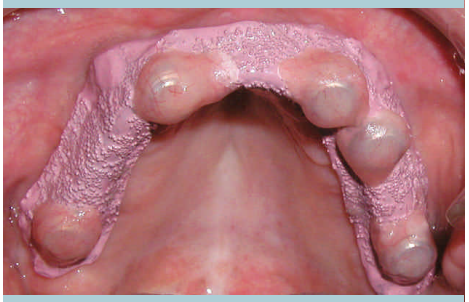


PRE OP PAN AND ANTERIOR VIEWS



POST GRAFTAND IMPLANT PLACEMENT

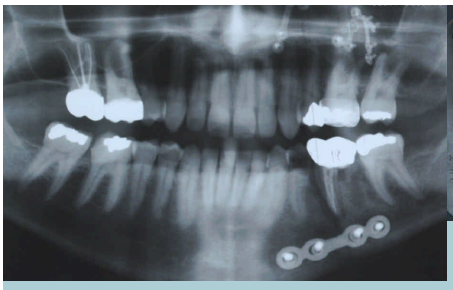
BAR WITH LOCATOR ATTACHMENTS



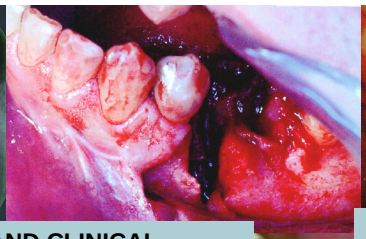
SUPERSTRUCTURE IN PLACE

COMPLETED TREATMENT

sation has returned. The bone was harvested from the iliac crest without complication or untoward sequellae.

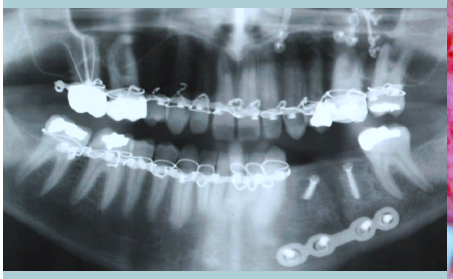


PRE OP PAN



RADIOGRAFIC AND CLINICAL CLOSE UP OF DEFECT

"J" BLOCK IN PLACE



POST GRAFT PAN

SURGERY BY JOHN KIESSELBACH DDS

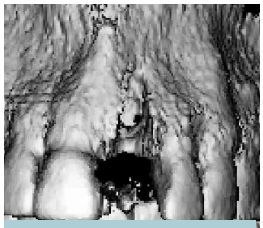
COMPLETED RESTORATIONS Custom abutments were made to retain TWO individual crowns

It is not necessary to have such a severe traumatic injury to benefit from block grafts. Another example involves a failed RCT treated central incisor. This resulted from a traumatic injury sustained many years ago and there had been numerous efforts to treat and retreat. It was finally apparent that a fracture was present and it was extracted. The defect looks rather innocuous until you look more closely. Just palpating with your finger over the buccal plate reveals the absence of bone. When you have removed the tooth, curette the socket walls and you know instantly that there is no bone. This patient presented for an implant treatment plan and it was obvious that a bone deficiency existed. The question was how big and how best to treat it. A digital scan shows quite graphically the rather large defect. Instead of particulate grafts and membranes, this is clearly a situation for a block graft. It's a no nonsense predictable one procedure surgery.

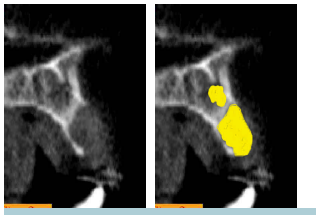
A couple of factors come to mind that would have benefited the patient significantly. First, when you see a situation like this develop, don't wait, advise the patient to have the failed tooth removed At once. Extending the time to extraction only enlarges the defect and the complexity of treatment. It does not matter if the patient wants an implant or not, the resulting defect is extremely difficult to mask esthetically and the pontic, if its going to be restored with a FPD, will be very large and bulbous. Another consideration is to immediately graft the socket after the extraction. It's easy to do this and the results are gratifying for the patient. The procedure takes less than 15 minutes, resorbable graft material, a resorbable membrane and some suture material. I have experienced both and there is a marked difference in the end result. A few additional illustrations are added to make the point. In retrospect, block grafts would have made a huge difference in the out comes.

TYPICAL EXAMPLE OF FACIAL PLATE "BLOW– OUT"

Post extraction defect



Digital scan

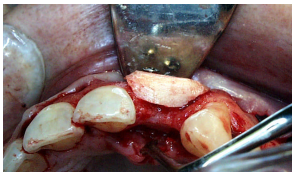


X SECTION OF DEFECT Yellow shows graft area

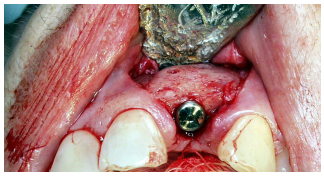
TYPICAL BLOCK GRAFT REPAIR OF ANTERIOR DEFECT

SURGERY BY JOHN KIESSELBACH DDS *** ROCKLIN ORAL SURGERY

POST EXTRACTION DEFECT



BONE BLOCK IN SITU



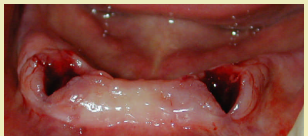
IMPLANT PLACEMENT

HEALING ABUTMENT IN PLACE

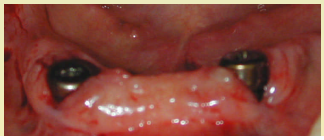
Temporary Implants

My experience with some temporary implants has frequently been disappointing. There are however some excellent applications for temporary implants and a recent innovative design has made them more predictable . In this treatment plan they were utilized to prevent tissue loading during the integration period of the definitive implants in sites 22 and 27. As an added benefit, the temporary implants are retentive elements for the lower denture during the integration period. This patient had an over-denture with two thimble crowns, a bar and two ERA attachments. It worked well for quite some time until root caries destroyed sufficient coronal root internally to make crown lengthening and re-treatment with conventional treatment unpredictable.

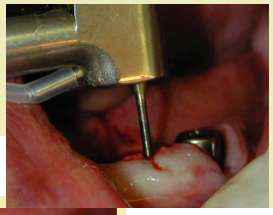
Pre-op view

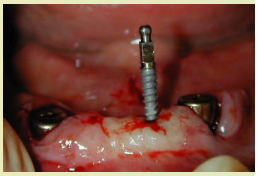


extraction sites

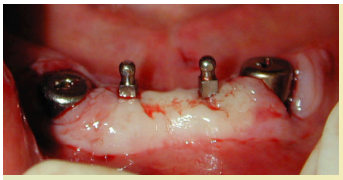


immediate placement

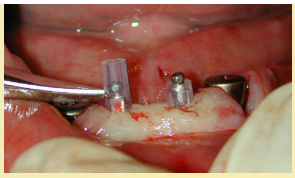




Mini implant placement drill and implant in the osteotomy site

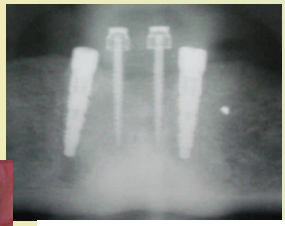


Implants seated



block out tubes in place

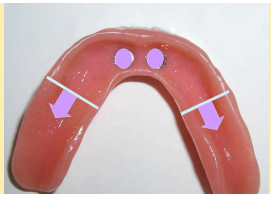
retention caps in place



Post - op X ray of completed Insertion of the definitive and temporary implants

Existing denture relieved

pick up of retention caps with CC resin



loading of the Mimi and distal ridge only

7 Days post –op

I placed two immediate Frialit-2 implants and 2 Sendax temporary implants. These mini implants are a one stage design and come with a ball shaped retentive transmucosal abutment. There is a small retention cap with a rubber O ring that is also supplied with the implant. The neck of the mini implant is blocked out and the retentive cap is picked up with cold cure resin. The entire procedure is completed in one appointment – insertion of the definitive implants, the mini implants and engagement of the mini implants for stability, retention and protection of the real implant sites. The anterior tissues are not loaded as the denture rests on the mini implants and the posterior ridge. This avoids the interim period where the patient has to tolerate the inconvenience of a full lower denture for 3 to 4 months. Many other applications and variations have been utilized with predictable success. It is now possible to provide a stable and retentive transitional prosthesis for most patients during the integration time period.

Treatment provided by PAUL BINON DDS, MSD. We provide surgical and prosthetic implant treatment .

PAUL P. BINON DDS, MSD

PROSTHODONTICS / IMPLANTS

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