Background: The use of a combination of tilted and axially-placed implants to support a immediately loaded full-arch fixed prosthesis has been validated in terms of medium- and long-term implant survival and success. However, few studies focus on the incidence of technical complications and their management.

Aim/Hypothesis: The purposes of this retrospective single center study were to evaluate the incidence of technical complications of immediately loaded full-arch fixed bridges supported by two axial and two tilted implants and to analyze their onset, frequency and the time necessary to manage them.

Material and Methods: Clinical records of patients treated between 2003 and 2016 that received at least one full-arch fixed bridge following the All-on-4 treatment concept (NobelSpeedy Groovy or Brånemark MkIV implants, Nobel Biocare AB, Gothenburg, Sweden) and attended follow-up visits at 6, 12, 18 and 24 months, and yearly up to 14 years were included. Patients received a temporary acrylic prosthesis within 48 hours of surgery and a definitive NobelProcera Implant Bridge bar with acrylic resin and composite teeth after 3 or 6 months of loading for mandibular and maxillary rehabilitations, respectively. Onset and frequency of technical complications were registered. Veneering material fracture (VMF), prosthetic and abutment screw loosening (PSL, ASL), prosthetic and abutment screw fractures (PSF, ASF), and wear of the abutment connection screw thread (WAST) were considered minor complications. Major technical complications included titanium bar fractures (TBF) and implant fractures (IF).

Results: 62 patients (36 women, 26 men, age 60.0 ± 9.5 years) who received 79 full-arch restorations (23 mandible, 22 maxilla, 17 both arches) were included. Follow-up ranged from 24 to 168 months (mean 99.0 ± 35.3 months). The most frequent prosthetic complication, VMF, occurred in 51.9% (n = 41) of definitive (median onset = 24 months, 29.3% occurred once, 70.7% occurred two or more times) and 25.3% (n = 20) of provisional prostheses. VMF was more frequent in patients with fixed full-arch restorations in both arches (P = 0.01, Chi-squared test). ALS was observed in 10 restorations (12.7%), PSL in 8 (10.1%), ASF in 3 (3.8%), PSF in 3 (3.8%), and WAST in 2 (2.5%). One TBF occurred in the cantilever in one mandibular restoration while no IFs were recorded. 38.7% (n = 24) of patients experienced no prosthetic complications, 59.6% (n = 37) experienced minor complications and only one patient experienced both minor and major complications. 99.4% of complications were resolved within 48 hours.

Conclusions and Clinical Implications: The number of technical complications in full-arch rehabilitations supported by two tilted and two axial implants is lower in this study than reported in literature, considering the long-term follow-up range. Furthermore, the majority of complications were easily resolved within 48 hours. Still, the amount of recorded complications is considerable and clinicians should be prepared to manage them. Further studies are needed to better recognize risk factors in order to avoid them.