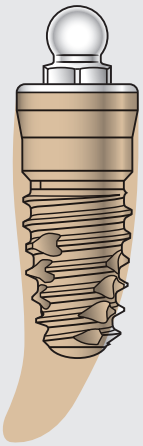
+ Dalbo®-System on implants and roots robust and ingenious



CENDRES+ MÉTAUX

Dental

Dalbo®-System

Dalbo®-System – From original to system
The ball anchor is the most widely used anchoring method worldwide. Cendres+Métaux SA is the leading supplier of prefabricated precision attachments for prosthetics. The original Cendres+Métaux Dalbo® ball anchor has been perfected and developed to become the ingenious Dalbo®-System.
This brochure provides an overview of the Dalbo®-System, its application and advantages.
More detailed information can be obtained from your local Cendres+Métaux representative or from Cendres+Métaux Switzerland.

Dalbo® ball anchors on 2 implants
Brief description of the case (Case 1, fig. 1–3)
An implant-borne removable full denture is an alternative for treatment of the edentulous jaw. A group of scientific and clinical experts met at the McGill University (Montreal, Canada) to draw up a consensus report.

The following fact was recorded in the report: a removable full denture supported on two implants is currently the preferred treatment option for the edentulous jaw. This treatment concept is not only reliable but also very cost-effective.

Dalbo® ball anchors on 2 root caps
Brief description of the case (Case 2, fig. 4)
Two root caps with Dalbo® ball anchors represent a standard application and a simple method of retaining an overdenture.

Dalbo®-Rotex®
Brief description of the case (Case 3, fig. 5–6)
Endodontic Dalbo®-Rotex® anchors for temporary retention of removable temporary dentures or as economy permanent attachments to retain simple overdentures.

Case 1: Dalbo®-PLUS

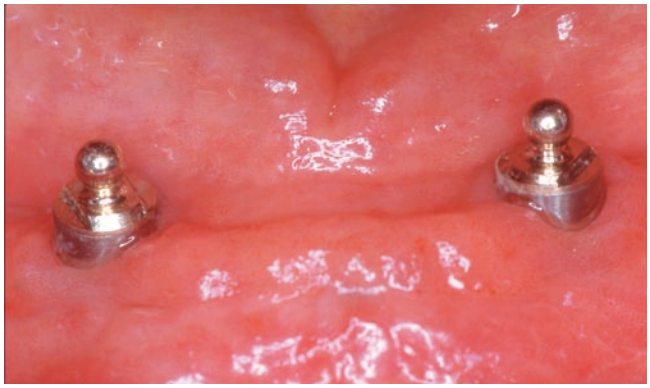


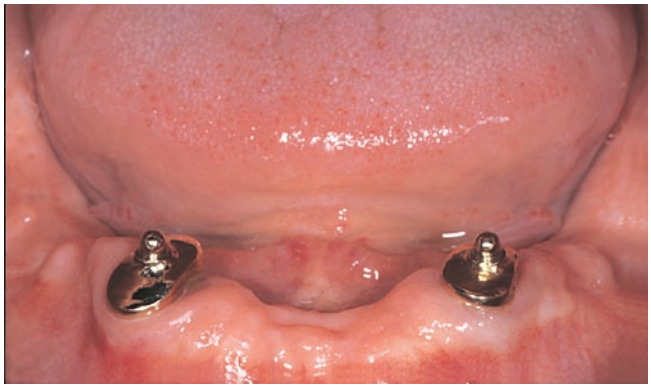
Fig. 1

Fig. 2

Fig. 3

Fig. 1–3 Treatment carried out by:
Christophe Rignon-Bret (DCD, MS, PhD, Associate Professor), Jean-Marie Rignon-Bret (DCD, DSO, DEO, Professor, Head of Prosthetic Department), René Descartes University, Paris 5, France.

Case 2: Dalbo®-ball and socket unit (Fig. 4)



Case 3: Dalbo®-Rotex®

Fig. 5

Fig. 6

Fig. 4–6 Photographs provided by:
Ch. E. Besimo, Prof. Dr med. dent.
Department of Dentistry, Aesculap Hospital, Brunnen, Switzerland

Dalbo® ball anchor on 1 implant

Brief description of the case (Case 4, fig. 1–4)

A 74-year-old female patient wanted the retention of her lower full denture improved. She had no problems with her full upper denture.

As the options were very restricted financially, only one implant was placed in the region of the symphysis. Financial restrictions also precluded the fabrication of a new denture. The lower denture as well as the intermaxillary relationship and occlusion of the dentures were also acceptable. After osseointegration, the implant was equipped with a prefabricated spherical anchor. The secondary unit was integrated into the existing lower denture under masticatory pressure.

This considerably improved the retention of the denture. The patient has now been wearing the denture for 3 years and has not requested any further adjustments.

Case 4: Dalbo® Ball Anchor on 1 implant

Fig. 1

Fig. 2

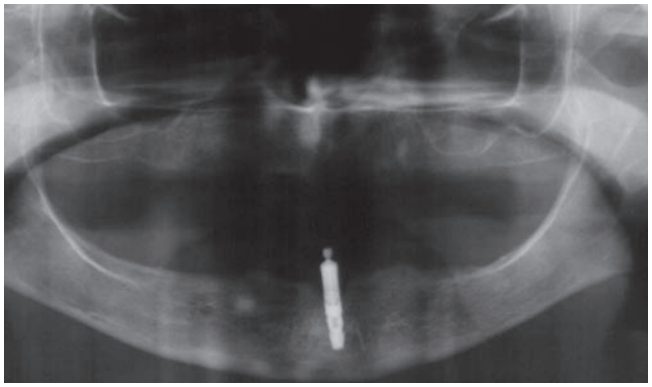


Fig. 3

Fig. 4

Fig. 1–4 Treatment carried out by:
Prof. Dr. J. Setz, Department of Dental Prosthetics,
Martin Luther University, Halle-Wittenberg, Germany

Dalbo® ball anchor on 1 root cap

Brief description of the case (Case 5, fig. 5)

A root cap with a Dalbo® ball anchor on a residual abutment tooth provided a simple option to improve the retention of the denture. In this case the denture-related mucosal irritation visible in several areas illustrates a possible problem with this type of prosthetic restoration. Treatment options, such as a full denture, increasing the amount of abutments by placing an implant in the opposite canine region or a fully implant-borne denture, should therefore be taken into consideration depending on the anatomical and functional conditions as well as patient requirements.

Case 5: Dalbo® Ball Anchor on 1 Root Cap

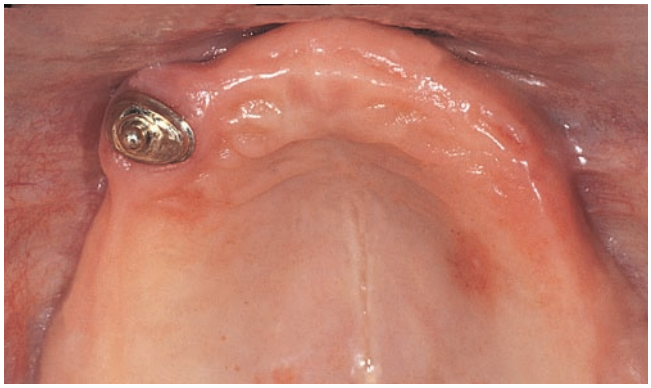


Fig. 5

Fig. 5 Photographs provided by:
Ch. E. Besimo, Prof. Dr med. dent.
Department of Dentistry, Aesculap Hospital, Brunnen, Switzerland

Implants with Dalbo® ball anchors replacing critical, missing abutment teeth

Brief description of the concept (Case 6 + 7)

Since 1997 an increasing number of older patients with only a few residual teeth have been treated with implants. The primary function of these implants is as strategic abutments for stabilising a removable denture. This concept of implantological, prosthetic treatment has been largely ignored till now: one-tooth restorations, free-end saddles and edentulous jaws have been the main focus of implant treatment.

As there is no standard classification for the residual dentition, the use of implants in these cases is illustrated with two examples.

To date 27 patients have been fitted with 42 implants and only one implant has failed.

Case 6

Fig. 1

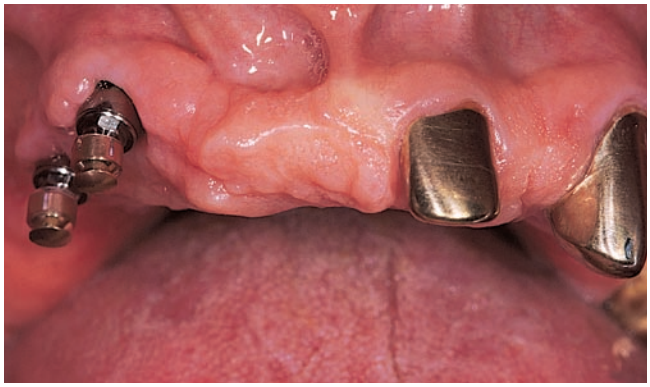


Fig. 2

Fig. 3

Case 7

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Treatment carried out by:

Prof. Dr Dipl.-Ing. E.-J. Richter, Head of Dental Prosthetics, University Hospital, Würzburg, Germany

Dalbo®-PLUS elliptic ball anchors on 4 implants, a removable bridge restoration

Brief description (Case 8, fig. 1–8)

A 62-year-old female patient came to us because she was dissatisfied with the retention and function of her upper full denture, as she still had a complete dental arch in the opposing jaw. The patient also complained of a gagging reflex due to the palatal coverage of the denture; though this was not serious, it could not be ignored.

Following implantation, osseointegration and exposure of four implants, a superstructure design was selected based on removable restorations on tapered crowns; the design was very similar to that of a fixed bridge restoration. As the design was very hygienic, the restoration only needed to be operator-removable.

The restoration has been in situ for two years and the patient is extremely satisfied with it.

Case 8

Fig. 1

Fig. 2

Fig. 5

Fig. 3

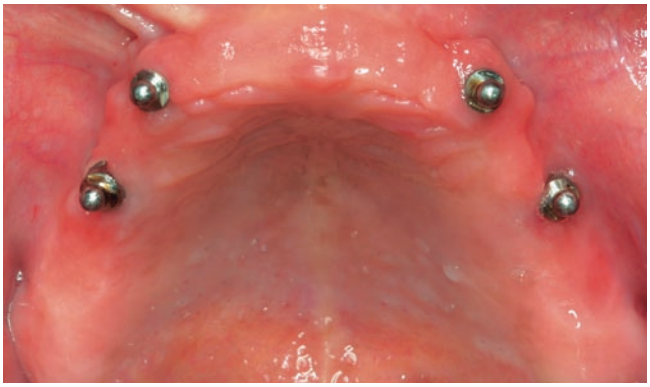


Fig. 6

Fig. 4

Fig. 7

Fig. 8

Treatment carried out by:
Prof. Dr Michael Heners (†), Berthold Steiner,
Master Dental Technician
Dental Training College, Karlsruhe, Germany

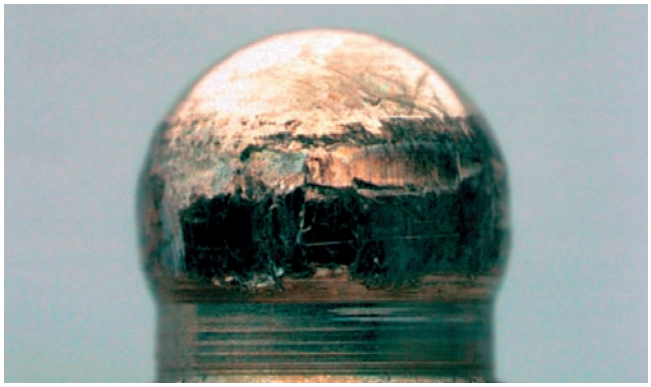
Dalbo®-System

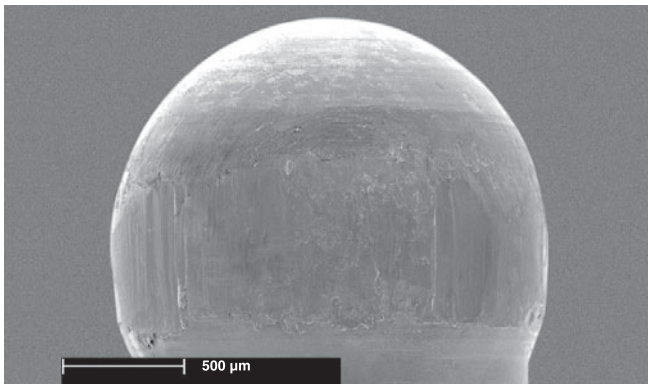
Dalbo®-System – Advantages **What are the advantages of the Dalbo®-System compared with other types of anchors?**	
1. Reliability and durability	The compact spherical shape is highly resistant. The special precious metal lamellar design ensures reliable, durable functioning. The functioning principle has been in use for over 40 years and has proven its effectiveness in millions of cases. Patients questioned describe having a «feeling of security».
2. Simplicity	The Dalbo®-System is easy to use for the practice and laboratory and requires minimum servicing. The retention force is accurately set to suit each patient directly in the dental practice.
3. Universal use	The system components have been optimised for the relevant application. Minimum space is required when integrating them into the denture. There is now a spherical male part with a special base for laser welding.
4. Compatibility	All female parts of the Dalbo®-System fit the spherical male parts of other manufacturers and spherical ball attachments (∅ 2.25 mm) on implants[1]. We recommend the use of the special Dalbo®-PLUS and Dalbo®-PLUS elliptic female parts for the renewal of older restorations and with ball attachments from other manufacturers.
[1] e.g. Straumann, Brånemark System®, OsseoTite NT®, SPI® System, Astra Tech Implants, Camlog® and other implant systems	

The Challenge: Durable function
Spherical anchors allow movement of the denture on the denture-bearing tissue. According to various authors there can be more than 2 million masticatory movements per year.
Tests and clinical experience indicate that not all modern materials or anchor designs can withstand this enormous loading without damage. Female parts fabricated from plastic or those with plastic inserts sometimes exhibit extreme wear of the male part caused by substances that have become deposited in the plastic. Plaque tends to build up on plastic inserts and can be very abrasive.

A study by the University of Kiel, Germany, proved that female parts with an integrated, hard spring ring damage the male part equator to the extent that there is an irreparable, massive loss of denture retention. The majority of springs also fractured when loaded. Another of the latest generation of attachments with special plastic inserts initially exhibited very different and sometimes non-physiological withdrawal forces, which decreased considerably after 50,000 cycles[2].

Damage caused by a plastic female part:
Irreparable damage to the male part caused by a build-up of substances in the plastic



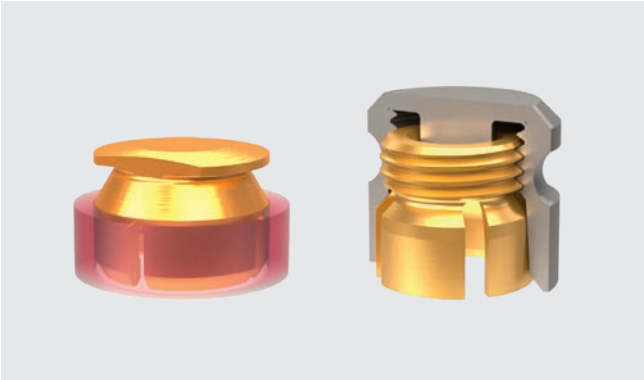


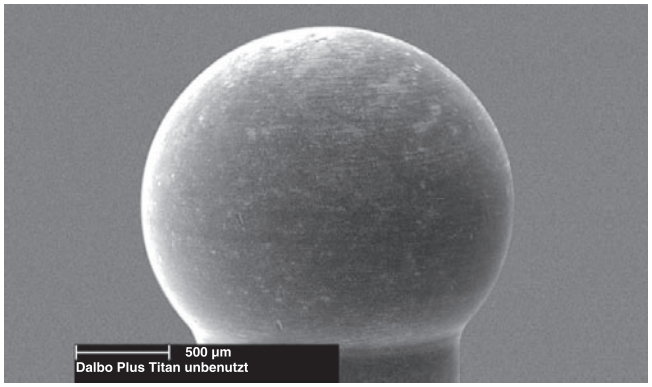
Damage caused by a female part with a spring unit:
Considerable damage to the male part caused by the spring at the sphere equator

[2] Ludwig K.; Kern M.; Hartfil H.:
Wear and tear of anchors with 50,000 fitting-withdrawal cycles in a water bath and eccentric end loading, 01.2004

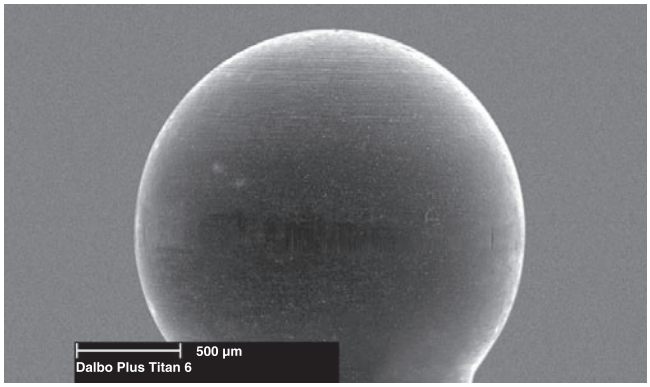
Solution:
The Dalbo®-System with precious metal lamellae
The Dalbo®-System uses a principle, which in comparison with other systems reduces the effects of wear and tear to a minimum. **Every female part has flexible precious metal lamellae.** These special lamellae prevent the build-up of abrasive plaque and toothpaste. When fitting the denture, the flexible lamellae open and slide smoothly over the spherical male part without damaging it. Decades of experience as well as extensive internal and external tests on the effects of wear and tear have shown that **there is for example virtually no wear after 50,000 fitting and withdrawal cycles[2]: 100 N were used as eccentric end loading to simulate loading during functional masticatory movements.**
These results ensure **durable denture retention, minimum servicing and greater satisfaction for your patients.**

Improve existing restorations with Dalbo®-PLUS female parts
Older, existing restorations with worn spherical anchors from any manufacturer can be easily improved. **Dalbo®-PLUS female parts (incl. elliptic version) can be fitted with different lamellae inserts to spheres with extensive wear to restore the retention.** These components are inserted very easily and quickly. The screwdriver/activator is used for easy, durable fine adjustment of the denture retention.

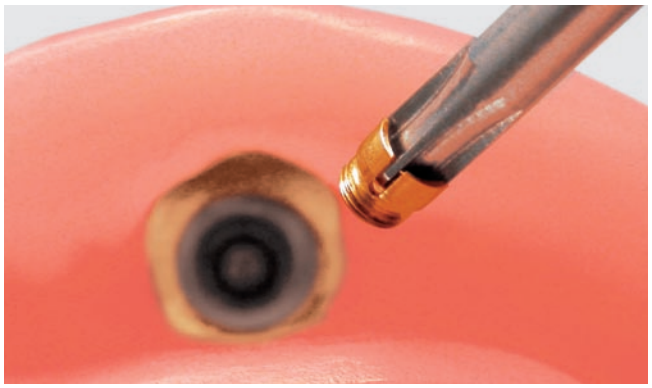




Straumann spherical titanium abutments before wear and tear



Straumann spherical titanium abutments after wear and tear


Easy replacement


Inserted – Activated – Ready

[2] Ludwig K.; Kern M.; Hartfil H.:
Wear and tear of anchors with 50,000 fitting-withdrawal cycles in a water bath and eccentric end loading, 01.2004

Dalbo®-System

The Dalbo®-System – Applications and Advantages of the Components
All the female parts shown here are based on the ∅ 2.25 male part. An overview of the different combinations as well as the Order Nbrs. can be found on the next double page.

Dalbo®-B

The original
The original shape of ball anchor for over 40 years. Robust design, durable, tested and proven. Height of the female part 3.1 mm. Entirely made out of precious metal. The flexible lamellae, which can be activated, ensure durable denture retention.
A spherical male part with a special base is available for laser welding. This component can also be soldered conventionally.

Dalbo®-PLUS and
Dalbo®-PLUS elliptic

The high-end and comfortable model. Height of the female part 3.1 mm.
Titanium female part with threaded precious metal lamellae insert allowing the retention force to be finely, permanently and instantly adjusted with a screwdriver. Tuning female part with a reduced inner diameter for integration into an existing denture which can be used with worn spherical anchors of other manufacturers.
This enables the retention of existing dentures to be improved.
The elliptic version provides increased retention in the denture acrylic and is especially recommended for use with implants.

Dalbo®-Classic and
Dalbo®-Classic elliptic

Cendres+Métaux ball anchor requiring the least space
The height of the female part is only 2.2 mm. One-piece precious metal female part.
The flexible lamellae, which can be activated, ensure durable denture retention.
The elliptic version provides increased retention in the denture acrylic and is especially recommended for use with implants.

Dalbo®-PLUS female part and Dalbo® Certain® Abutment

Ball abutments on implants
In collaboration with BIOMET 3i™, we have developed an abutment for the Dalbo®-PLUS
It would be hard to imagine the field of implantology without ball anchor systems. They are cost effective, easy to clean for the patient and they have a long lifespan. A great number of patients found their quality of life significantly improved by this type of therapy. Compatible with:
– Certain® PREVAIL™ 4.1 mm (D)
– OSSEOTITE Certain® 4.1 mm (D)
– OSSEOTITE NT Certain® 4.1 mm (D)

Dalbo®-Rotex®

A ball anchor with self-tapping root thread to allow direct, immediate involvement of the roots in the retention of the denture.
This method eliminates casting a root cap and fitting a ball anchor. This reduces the cost and the patient benefits from a shorter treatment time. Indicated for roots with indeterminate prognosis, temporary restorations as well as for NHS dentistry and elderly patients.
Plastic female parts (Order no. 051 868) are suitable for short-term temporary restorations; metal female parts from the Dalbo®-System are recommended for long-term temporary restorations.

Dalbo® Service-Set for anchors

For intraoral repairs of defective anchors from any manufacturer.
Existing, non-functioning anchors are cut back to the level of the cap. Then a hole is drilled directly into the root cap, a Dalbo® spherical anchor is inserted with the screw thread and cemented. Finally the female part supplied is integrated into the denture. The set contains all the components required for restoring anchorage.

Dalbo®-System

Combination options with the Dalbo®-System
This table provides information about available male/female part combinations as complete units as well as recommended customised combinations.

– 8 Cendres+Métaux spherical male parts, all with a ∅ 2.25 mm
– 6 female parts

Male parts \ Female parts		Male parts material	Dalbo®-Classic Order No. 055698 2.2 mm	Dalbo®-Classic elliptic Order No. 055887 2.2 mm	Dalbo®-B Order No. 051511 3.1 mm	Dalbo®-PLUS Order No. 055752 3.1 mm	Dalbo®-PLUS elliptic Order No. 055890 3.1 mm	Plastic Galak Order No. 051868 3.6 mm
Permanent restorations	All standard implant spherical anchors with Ø 2,5 mm	various	✓	✓	✓	✓	✓	
Permanent restorations	Yellow, for soldering Order No. 050423	Elitor®	✓	✓	Order No. 050427	✓	✓	
Permanent restorations	Pd–free, white, cast-on Order No. 055647	Valor®	Order No. 055689	Order No. 055892	✓	Order No. 055750	Order No. 055889	
Permanent restorations	Yellow, for soldering or laser welding Order No. 055921	Elitor®	✓	✓	✓	✓	✓	
Permanent restorations	Cast-on Order No. 055330	Korak	Order No. 055701	Order No. 055893	Order No. 055331	✓	✓	
Permanent restorations	Female part Dalbo®-PLUS and Dalbo® Certain® Abutment	Syntax	✓	✓	✓	Order No. 05000449 H 2 mm 05000451 H 4 mm 05000452 H 6 mm	✓	
Temporary restorations	Dalbo®-Rotex® «Bona», Size 1 Order No. 051869 Size 2 Order No. 051870	Pure titanium	✓	✓	✓	✓	✓	Order No. 051864 Order No. 051865
Temporary restorations	Dalbo®-Rotex® «Brunner», Size 1 Order No. 051871 Size 2 Order No. 051872	Pure titanium	✓	✓	✓	✓	✓	Order No. 051866 Order No. 051867
Servicing	Service-Set, for repairs Order No. 052091 Order No. 052089	Elitor®	✓	✓	✓	✓	✓	

Legend:

Elitor® = Protor® 3, yellow precious metal alloy
Galak = Orally stable plastic
Korak = non-residual burnout plastic
Pure titanium = Grade 4 pure titanium
Valor® = non-oxidising, Pd and Cu-free, cast-on precious alloy

Order No. = complete anchor (female and male parts)
✓ = only as single units (unlimited combination options)
= Ideal combination
= Recommended
= Recommended for temporary restorations
= Not recommended

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Last update: 2009

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