DePuy Spine

CHARITÉ™ Artificial Disc

Device Description

The CHARITÉ™ Artificial Disc is a weight-bearing modular implant consisting of two endplates and one sliding core. Endplates are manufactured from cobalt chromium alloy and are available in various sizes and degrees of angulation (parallel and oblique). A parallel and an oblique endplate of the same size can be combined for adaptation to the patient's lumbar lordosis. The sliding cores are manufactured from ultra-high molecular weight polyethylene [illegible] cobalt chromium alloy wire for x-ray [illegible] are available in various thicknesses [illegible] endplate size.

The following tables [illegible] the available sizes and configurations of the CHARITÉ Artificial Disc components.

CHARITÉ Artificial Disc Endplates

Size	Dimensions: AP width (mm)	Dimensions: Lateral width (mm)	Angles Available (degrees)
1	23	28.5	0, 5, 7.5, 10
2	25	31.5	0, 5, 7.5, 10
3	27	35.5	0, 5, 7.5, 10
4	29	38.5	0, 5, 7.5, 10
5	31	42.0	0, 5, 7.5, 10

CHARITÉ Artificial Disc Sliding Cores

Size	Diameter (mm)	Heights Available (mm)
1	23	7.5, 8.5, 9.5, 10.5, 11.5
2	25	7.5, 8.5, 9.5, 10.5, 11.5
3	27	7.5, 8.5, 9.5, 10.5, 11.5
4	29	8.5, 9.5, 10.5, 11.5
5	31	8.5, 9.5, 10.5, 11.5

Indications

The CHARITÉ Artificial Disc is indicated for spinal arthroplasty in skeletally mature patients with degenerative disc disease (DDD) at one level from L4-S1. DDD is defined as discogenic back pain with degeneration of the disc confirmed by patient history and radiographic studies. These DDD patients should have no more than 3mm of spondylolisthesis at the involved level. Patients receiving the CHARITÉ Artificial Disc should have failed at least six months of conservative treatment prior to implantation of the CHARITÉ Artificial Disc.

Contraindications

The CHARITÉ Artificial Disc should not be implanted in patients with the following conditions:

- active systemic infection or infection localized to the site of implantation
- osteoporosis
- osteopenia
- bony lumbar stenosis
- allergy or sensitivity to implant materials
- isolated radicular compression syndromes, especially due to disc herniation
- pars defect

Warnings

Correct placement of the device is essential to optimal performance. Use of the CHARITÉ Artificial Disc should only be undertaken after the surgeon has become thoroughly knowledgeable about spinal anatomy and biomechanics, has had experience with anterior approach spinal surgeries; and has had hands-on training in the use of this device.

Caution

CAUTION: Federal (USA) Law restricts this device to sale by or on the order of a physician (or properly licensed practitioner) who has appropriate training or experience.

Precautions

To ensure correct and stable joining of the modular CHARITÉ Artificial Disc components, ensure that the combination dimensions are congruent.

To prevent damage to the bearing surfaces and ensure a solid assembly, clean each component with sterile liquid before joining to ensure that blood or other debris is not trapped within the assembly.

The safety and effectiveness of this device has not been established in patients with the following conditions: two or more degenerative discs, morbid obesity, pregnancy, spondylolisthesis greater than 3mm, or two or more unstable segments.

Patient selection is extremely important. In selecting patients for an artificial disc the following factors can be of extreme importance to the success of the procedure: the patient's occupation or activity, a condition of senility, mental illness, alcoholism, or drug abuse, and certain degenerative diseases (e.g. degenerative scoliosis or ankylosing spondylitis) that may be so advanced at the time of implantation that the expected useful life of the device is substantially decreased.

Correct selection of the appropriate implant size is extremely important to assure the placement and function of the disc.

Surgical implants must never be reused or reimplanted. Even though the device appears undamaged, it may have small defects and internal stress patterns that may lead to early breakage.

Use aseptic technique when removing the CHARITÉ Artificial Disc components from the innermost packaging.

Use care when handling a CHARITÉ Artificial Disc implant to ensure that it does not come in contact with objects that could damage the implant. Exercise care to ensure that implantation instruments do not contact the highly polished articulating surfaces of the endplates. Damaged implants are no longer functionally reliable.

DePuy Spine CHARITÉ Artificial Disc components should not be used with components of spinal systems from other manufacturers.

Patients should be instructed in postoperative care procedures and should be advised of the importance of adhering to these procedures for successful treatment with the device.

Due to the proximity of vascular and neurologic structures to the implantation site, there are risks of serious or fatal hemorrhage and risks of neurologic damage with the use of this device. Serious or fatal hemorrhage may occur if the great vessels are eroded or punctured during implantation and are subsequently damaged due to breakage of implants, migration of implants, or if pulsatile erosion of the vessels occurs because of close apposition of the implants.

Adverse Events

The following complications were reported during a randomized, multi-center clinical study of 205 patients treated with the CHARITÉ Artificial Disc for the approved indication listed in this package insert. The following table lists complications that occurred in > 1% of CHARITÉ subjects.

Adverse Events for CHARITÉ from the Randomized, Multi-center Clinical Study

Complication	Intraoperative 0-2 days: Inves.	Intraoperative 0-2 days: Control	Perioperative >2 – 42 days: Inves.	Perioperative >2 – 42 days: Control	Short Term >42 – 210 days: Inves.	Short Term >42 – 210 days: Control	Long Term >210 days: Inves.	Long Term >210 days: Control	# of Subjects Reporting & Total Adverse Events*: Investigational #(% of 205) Total events	# of Subjects Reporting & Total Adverse Events*: Control #(% of 99) Total events
Burning or dysesthetic pain	0	2	3	0	2	1	0	0	5 (2.4) 5	3 (3.0) 3
Cardiovascular	5	0	1	1	0	0	0	0	6 (2.9) 6	1 (1.0) 1
Clinically significant blood loss (> 1500 cc)	1	2	0	0	0	0	0	0	1 (0.5) 1	2 (2.0) 2
Collapse/subsidence into adjacent vertebrae	1	0	2	0	1	0	3	1	7 (3.4) 7	1 (1.0) 1
Dermatological	2	3	1	0	0	0	0	0	3 (1.5) 3	3 (3.0) 3
Dizziness	2	0	2	0	0	0	0	0	4 (2.0) 4	0 (0.0) 0
Drug allergy	0	0	1	2	0	0	0	0	1 (0.5) 1	2 (2.0) 2
Edema	1	1	2	0	1	2	1	0	5 (2.4) 5	3 (3.0) 3
Fever	3	8	0	2	0	0	0	0	3 (1.5) 3	8 (8.1) 8
Fracture (non-vertebral)	0	0	0	0	2	1	2	0	5 (2.4) 4*	1 (1.0) 1
Gastrointestinal	7	3	4	3	1	0	0	1	13 (6.3) 12*	7 (7.1) 7
Genitourinary	1	1	0	0	1	0	2	0	4 (2.0) 4	1 (1.0) 1
Hernia	0	0	0	1	1	0	0	1	1 (0.5) 1	2 (2.0) 2
Infection – other non-wound related	1	0	1	0	1	0	2	1	5 (2.4) 5	1 (1.0) 1
Infection – Superficial wound with incision site pain	0	1	9	1	2	0	2	0	13 (6.3) 13	2 (2.0) 2
Infection – UTI	1	0	2	1	2	0	0	0	5 (2.4) 5	1 (1.0) 1
Motor deficit in index level	1	0	0	0	1	1	1	0	3 (1.5) 3	1 (1.0) 1
Musculoskeletal	1	0	1	0	1	0	1	1	4 (2.0) 4	1 (1.0) 1
Musculoskeletal spasms – back	1	0	3	1	3	1	1	0	8 (3.9) 8	2 (2.0) 2
Musculoskeletal spasms – back and leg	1	0	2	0	1	1	1	0	5 (2.4) 5	1 (1.0) 1
Musculoskeletal spasms – leg	0	0	4	0	3	1	0	0	7 (3.4) 7	1 (1.0) 1
Numbness index level related	2	2	9	4	7	0	2	1	20 (9.8) 20	7 (7.1) 7
Numbness peripheral nerve or non-index level related	2	0	0	3	3	0	0	1	5 (2.4) 5	4 (4.0) 4
Other	2	1	1	1	2	1	0	0	5 (2.4)[1] 5	3 (3.0)[2] 3
Pain – back	2	3	12	11	27	16	15	2	59 (28.8) 56*	32 (32.3) 32
Pain – back and lower extremities	1	1	9	4	10	7	5	2	25 (12.2) 25	14 (14.1) 14
Pain – back and other	1	0	0	0	1	0	0	0	3 (1.5) 2*	0 (0.0) 0
Pain – incision site	4	1	2	0	0	0	0	0	6 (2.9) 6	1 (1.0) 1
Pain – lower extremities	9	2	28	10	16	9	9	4	63 (30.7) 62*	25 (25.3) 25
Pain – lower extremities with numbness at index level	0	0	3	1	0	1	1	1	4 (2.0) 4	4 (4.0) 3*
Pain other (not back/hip/leg)	5	1	2	1	8	3	5	3	21 (10.2) 20*	8 (8.1) 8
Psychological	0	0	1	0	1	2	1	1	3 (1.5) 3	3 (3.0) 3
Reflex change	0	0	0	0	2	1	0	1	2 (1.0) 2	2 (2.0) 2
Respiratory	3	1	0	0	0	0	0	0	3 (1.5) 3	1 (1.0) 1
Retrograde ejaculation	2	2	0	0	1	1	0	0	3 (1.5) 3	3 (3.0) 3
Surgery – index level	1	0	0	0	1	2	8	8	11 (5.4) 10*	8 (8.1) 8
Vessel damage/bleeding, minor	7	0	0	0	1	1	0	0	8 (3.9) 8	1 (1.0) 1
Any Adverse Event									155 (75.6)	77 (77.8)

* In cases where the totals in this column do not correspond with additions from timecourse columns to the left, the sponsor has data that documents that an adverse event occurred, but does not have data to specify the time frame. The numbers in these columns represent the total adverse events reported in the study.

[1] Five randomized CHARITÉ subjects reported seven "Other" events: twitching head and hand, nosebleeds, peritoneal tear, nausea, fainting, syncope, and flu.

[2] Three BAK subjects reported three "Other" events: arachnoiditis, lip blister, and whole body swelling.

The incidence of the following adverse events occurred in 1% or less of the total investigational group subjects: adjacent level DDD or DJD changes, anemia, annulus ossification, calcification resulting in bridging trabecular bone, coumadin overdose, dermatological drug allergy, dural tear, epidural hematoma, fatigue, headache, herniated nucleus pulposus, ileus requiring N/G tube, implant displacement, incontinence, insomnia, IV site inflammation, narcotic addiction, nerve root injury, non-specific musculoskeletal spasms, other degenerative lumbar disease, groin pain, positive Waddell signs, pulmonary embolism, pulmonary infection, puritis, wound swelling infection, retroperitoneal hematoma, spinal stenosis, spondylolisthesis acquisita, thrombosis, major vessel damage/bleeding, and peritoneal adhesions. One death related to narcotics use was reported.

Prior to enrolling subjects into the randomized, multi-center clinical study, each investigational site was also required to enroll their first five CHARITÉ Artificial Disc subjects as training cases with a total of 71 patients enrolled.

The incidence of adverse events within the first two days of surgery was higher among training subjects (33/71, 46.5%) than among the randomized CHARITÉ Artificial Disc subjects (58/205, 28.3%). The rates at all other time periods are similar between these two groups. There was a higher incidence of device-related adverse events in the training group (8/71, 11.3%) than in the randomized CHARITÉ Artificial Disc group (16/205, 7.8%).

The following table compares the complications that occurred in >1% of the 71 training patients with the complications that occurred in >1% of the 205 randomized subjects.

Adverse Events – CHARITE Randomi[illegible]ining Cases

Complication	Intraoperative 0-2 days: Rand.	Intraoperative 0-2 days: Trng.	Perioperative >2 – 42 days: Rand.	Perioperative >2 – 42 days: Trng.	Short Term >42 – 210 days: Rand.	Short Term >42 – 210 days: Trng.	Long Term >210 days: Rand.	Long Term >210 days: Trng.	# of Subjects Reporting & Total Adverse Events*: Randomized #(% of 205) Total events	# of Subjects Reporting & Total Adverse Events*: Training #(% of 71) Total events
Anemia	1	1	0	0	0	0	0	0	2 (<1) 1*	1 (1.4) 1
Annular Ossification	0	0	0	0	0	0	1	1	1 (<1) 1	1 (1.4) 1
Bowel Perforation	0	1	0	0	0	0	0	0	0	1 (1.4) 1
Burning or dysesthetic pain	0	0	3	0	2	2	0	1	5 (2.4) 5	3 (4.2) 3
Cardiovascular	5	0	1	1	0	0	0	0	6 (2.9) 6	1 (1.4) 1
Clinically significant blood loss (>1500 cc)	1	0	0	0	0	0	0	0	1 (<1) 1	0
Collapse/subsidence into adjacent vertebrae	1	0	2	0	1	0	3	0	7 (3.4) 7	0
Degenerative Disease Progression, other lumbar	1	0	0	0	0	0	0	1	1 (<1) 1	1 (1.4) 1
Degenerative Disease Progression, non-lumbar	0	0	0	0	0	1	0	1	0	2 (2.8) 2
Dermatological	2	2	1	0	0	0	0	0	3 (1.5) 3	2 (2.8) 2
Diplopia	0	1	0	0	0	0	0	0	0	1 (1.4) 1
Dizziness	2	1	2	0	0	0	0	0	4 (2.0) 4	1 (1.4) 1
Edema	1	2	2	1	1	0	1	0	5 (2.4) 5	3 (4.2) 3
Fever	3	3	0	0	0	0	0	0	3 (1.5) 3	3 (4.2) 3
Fracture (non-vertebral)	0	0	0	0	2	0	2	1	5 (2.4) 4*	1 (1.4) 1
Gastrointestinal	7	8	4	2	1	0	0	1	13 (6.3) 12*	11 (15.5) 11
Genitourinary	1	0	0	0	1	1	2	1	4 (2.0) 4	2 (2.8) 2
Headache	0	1	0	0	1	0	0	0	1 (<1) 1	1 (1.4) 1
Hernia	0	0	0	0	1	1	0	1	1 (<1) 1	2 (2.8) 2
Ileus requiring N/G tube	1	2	1	1	0	0	0	0	2 (<1) 2	3 (4.2) 3
Implant displacement	1	1	0	2	0	1	0	0	1 (<1) 1	4 (5.6) 4
Infection – other non-wound related	1	0	1	1	1	2	2	1	5 (2.4) 5	4 (5.6) 4
Infection – Peritonitis	0	0	0	1	0	0	0	0	0	1 (1.4) 1
Infection – Superficial wound with incision site pain	0	1	9	4	2	0	2	0	13 (6.3) 13	5 (7.0) 5
Infection – UTI	1	0	2	1	2	0	0	0	5 (2.4) 5	1 (1.4) 1
Insomnia	0	0	0	1	1	0	0	0	1 (<1) 1	1 (1.4) 1
Motor deficit in index level	1	0	0	1	1	0	1	0	3 (1.5) 3	1 (1.4) 1
Musculoskeletal	1	0	1	1	1	0	1	1	4 (2.0) 4	2 (2.8) 2
Musculoskeletal spasms – back	1	0	3	1	3	1	1	1	8 (3.9) 8	3 (4.2) 3
Musculoskeletal spasms – back and leg	1	0	2	0	1	0	1	0	5 (2.4) 5	0
Musculoskeletal spasms – leg	0	0	4	2	3	1	0	0	7 (3.4) 7	3 (4.2) 3
Numbness and motor deficit index level	0	1	0	1	0	0	0	0	0	2 (2.8) 2
Numbness index level related	2	3	9	4	7	5	2	2	20 (9.8) 20	14 (19.7) 14
Numbness lower sacral root distribution	0	0	0	1	0	1	0	0	0	2 (2.8) 2
Numbness peripheral nerve or non-index level related	2	2	0	0	3	1	0	0	5 (2.4) 5	3 (4.2) 3
Other	2	2	1	0	2	1	0	1	6 (2.4)[1] 5	4 (5.6)[2] 4
Pain – back	2	3	12	8	27	15	15	3	59 (28.8) 56*	27 (38.0) 27
Pain – back and lower extremities	1	1	9	2	10	3	5	2	25 (12.2) 25	8 (11.3) 8
Pain – back and lower extremities with burning	1	0	1	0	0	0	0	1	2 (<1) 2	1 (1.4) 1
Pain – back and lower extremities with numbness at index level	0	0	0	0	0	0	0	1	0	1 (1.4) 1
Pain – back and other	1	1	0	0	1	0	0	0	3 (1.5) 2*	1 (1.4) 1
Pain – groin area	1	0	0	2	0	0	0	0	1 (<1) 1	2 (2.8) 2
Pain – incision site	4	8	2	1	0	0	0	0	6 (2.9) 6	9 (12.7) 9
Pain – lower extremities	9	3	28	7	16	10	9	1	63 (30.7) 62*	21 (29.6) 21
Pain – lower extremities and incision site	0	2	0	0	0	0	0	0	0	2 (2.8) 2
Pain – lower extremities with numbness at index level	0	0	3	1	0	0	1	0	4 (2.0) 4	1 (1.4) 1
Pain other (not back/hip/leg)	5	3	2	2	8	2	5	4	21 (10.2) 20*	11 (15.5) 11
Psychological	0	0	1	0	1	1	1	0	3 (1.5) 3	1 (1.4) 1

Adverse Eve[illegible]RITÉ Randomized vs Training Cases										
	Intraoperative 0-2 days		Perioperative >2 – 42 days		Short Term >42 – 210 days		Long Term >210 days		# of Subjects Reporting & Total Adverse Events*	
Complication	Rand.	Trng.	Rand.	Trng.	Rand.	Trng.	Rand.	Trng.	Randomized # (% of 205) Total events	Training # (% of 71) Total events
Reflex change	0	0	0	0	2	1	0	0	2 (<1) 2	1 (1.4) 1
Respiratory	3	0	0	0	0	0	0	0	3 (1.5) 3	0
Retrograde ejaculation	2	0	0	0	1	0	0	0	3 (1.5) 3	0
Seizures	0	1	0	0	0	0	0	0	0	1 (1.4) 1
Surgery – index level	[illegible]	2	0	1	1	0	8	2	11 (5.4) 10*	5 (7.0) 5
[illegible]	0	[illegible]	[illegible]	[illegible]	0	[illegible]	[illegible]	0	0	1 (1.4) [illegible]
Vessel damage/bleeding [illegible]	[illegible]	[illegible]	0	0	1	0	0	0	6 (2.9) 8	[illegible]

[illegible] columns to the left, the sponsor has data that documents that an adverse event occurred, but does not have data to specify the time frame. The numbers in these columns represent the total adverse events reported in the study.

Five randomized CHARITÉ subjects reported seven "Other" events: twitching head and hand, nosebleeds, peritoneal tear, nausea, fainting, syncope, and flu.

Four training CHARITÉ subjects reported five "Other" events: multiple sclerosis, stiffness, left [illegible]

The following potential adverse events (singly or in combination) which might be expected to occur, but were not observed in the clinical trial, could also result from the implantation of the CHARITÉ Artificial Disc:

- Mechanical failure of the device due to bending or breakage resulting in loss of disc height;
- Expulsion or retropulsion, potentially causing pain, paralysis, vascular or neurologic damage, spinal cord impingement or damage, or other conditions;
- Implant breakage;
- Reoperation due to mechanical breakdown of the device or if the implantation procedure fails to resolve the patient's syndrome;
- Change in lordosis;
- Injury to kidneys or ureters;
- Deterioration in neurologic status;
- Facet joint deterioration;
- Spondylolysis;
- Spondylolisthesis;
- Nerve damage due to surgical trauma or presence of the device, neurological difficulties including bowel and/or bladder dysfunction, impotence, tethering of nerves in scar tissue, muscle weakness or paraesthesia;
- Vascular damage resulting in catastrophic or fatal bleeding;
- Malpositioned implants adjacent to large arteries or veins could erode these vessels and cause catastrophic bleeding in the late postoperative period;
- Dural tears experienced during surgery resulting in the need for further surgery for dural repair, a chronic CSF leak or fistula, and possible meningitis;
- Bursitis;
- Paralysis;
- Reflex sympathetic dystrophy;
- Damage to lymphatic vessels and/or lymphatic fluid exudation;
- Fracture of bony structures; and,
- Death.

Clinical Studies

Clinical data were collected to evaluate the safety and effectiveness of the CHARITÉ Artificial Disc as compared to the control device (a commercially available interbody fusion system). The purpose of the study was to demonstrate the non-inferiority of the CHARITÉ Artificial Disc to an interbody fusion system. To qualify for enrollment in the study, patients met all the inclusion criteria and none of the exclusion criteria listed in the following table:

Inclusion	Exclusion
• Male or female • Age 18-60 years • Symptomatic degenerative disc disease with objective evidence of lumbar DDD by CT or MR scan, followed by discogram • Single level disease at L_4L_5 or L_5S_1 • Minimum of 6 months of unsuccessful conservative treatment • Oswestry Low Back Pain Disability Questionnaire ≥30 points • Patient a surgical candidate for an anterior approach to the lumbar spine (<3 abdominal surgeries) • Back pain at the operative level only (by discogram) • Leg pain and/or back pain in the absence of nerve root compression, per MRI or CT scan, without prolapse or narrowing of the lateral recess • VAS ≥40mm • Able to comply with protocol • Informed consent	• Previous or other spinal surgery at any level, except prior discectomy, laminotomy, laminectomy, or nucleolysis at the same level • Multiple level degeneration • Previous trauma to the L_4, L_5, or S_1 levels in compression or burst • Non contained or extruded herniated nucleus pulposus • Mid-sagittal stenosis of <8mm (by CT or MR) • Spondylolisthesis >3mm • Lumbar scoliosis (>11° sagittal plane deformity) • Spinal tumor • Active systemic or surgical site infection • Facet joint arthrosis • Arachnoiditis • Isthmic spondylolisthesis • Chronic steroid use • Metal allergy • Pregnancy • Autoimmune disorders

Inclusion	Exclusion
DDD is defined as discogenic back pain with degeneration of the disc as confirmed by history and radiographic studies with one or more of the following factors: • Contained herniated nucleus pulposus • Facet joint degeneration/changes • Decreased disc height by ≥2mm, and/or • Scarring/thickening of ligamentum flavum, annulus fibrosis, or facet joint capsule	• Psychosocial disorders • Morbid obesity (BMI >40) • Bone growth stimulator use in spine • Investigational drug or device use within 30 days • Osteoporosis or osteopenia or metabolic bone disease • Positive single or bilateral straight leg raising test

After completion of the procedure, patients followed a standardized postoperative care protocol. Patients could ambulate on the day of surgery, as tolerated, with an elastic bandage or lumbosacral orthosis to provide support to the abdominal musculature. Lumbar stabilization therapy was initiated 2 to 4 weeks postoperatively, as tolerated. Aerobic walking was encouraged for the first six [illegible] exercise. Patients were instructed [illegible]

Each patient was to remain in the study for 24 months post-treatment. Total study duration was comprised of the pretreatment, intraoperative, and immediate postoperative periods, followed by evaluations at 6 weeks, 3 months, 6 months, 12 months, and 24 months.

Safety of the CHARITÉ Artificial Disc was assessed by monitoring intraoperative and postoperative complications, including infection, thrombosis, disc migration, and disc subsidence, as well as re-operation and other adverse events. Radiographs were used to monitor the occurrence of some of the adverse events and complications, including subsidence of the device into the adjacent disc, other changes in the implant, and spinal instability.

Efficacy of the CHARITÉ Artificial Disc was assessed primarily by a success criteria comprised of: level of disability (Oswestry Low Back Disability Index (ODI)), neurological assessment (Functional Status) and information from adverse event data. The elements of the success criteria were selected to minimize investigator bias. The patient completed the ODI independently and a blinded evaluator graded the Functional Status. The potential for investigator bias was also minimized in the secondary and other endpoints by use of patient-completed evaluations: Visual Analog Scale (VAS) for back pain, SF-36 to assess quality of life, and a series of patient satisfaction questions. All radiographic endpoints were evaluated independently by a core laboratory and reviewed by an independent radiologist.

To be considered an overall success, a patient must have had: an improvement of at least 25% in the ODI score at 24 months compared to baseline, no device failures requiring revision, re-operation, or removal; absence of major complications, defined as major blood vessel injury, neurological damage, or nerve root injury; and maintenance or improvement in neurological status at 24 months, with no new permanent neurological deficits compared to baseline.

The sponsor considered the study a success if the Overall Success rates of the two treatment groups were non-inferior, i.e., the difference in Overall Success rates (i.e., non-inferiority margin) is no greater than 15%. However, FDA requested that the data also be analyzed and reported using: 1) an improvement in the ODI ≥15 points at 24 months compared to the score at baseline; and 2) a non-inferiority margin of 10%.

While not statistically significant, the operative time and mean blood loss for the subjects who received the CHARITÉ Artificial Disc were lower than the control group. Subjects who received the CHARITÉ Artificial Disc were discharged from the hospital on average in 3.7 days compared to 4.2 days in control subjects.

Characteristic	CHARITÉ	Control
Number of subjects enrolled	205	99
Level fused or implanted		
L4/L5	61 (30%)	32 (32%)
L5/S1	144 (70%)	67 (68%)
Total surgery time (min)		
Mean (Std)	110.8 (47.66)	114.0 (67.85)
Median	99.0	87.0
Min, Max	42.0, 300.0	40.0, 410.0
Estimated blood loss (cc)		
N	200	99
Mean (Std)	205.0 (211.70)	208.9 (283.95)
Median	150.0	100.0
Min, Max	10.0, 1500.0	20.0, 2000.0
Duration of Hospitalization		
N	204	99
Mean	3.7	4.2
Std. Dev.	1.18	1.99
Median	4.0	4.0
Min, Max	1.0, 11	2.0, 16

The primary effectiveness endpoint of this study was the difference in proportion of Overall Success between the two treatment groups. The success status of subjects was summarized by treatment group using counts and percentages. The following table compares the success rates for the individual primary outcome parameters for all randomized subjects as well as the Overall Success rates, using both the sponsor's and FDA's ODI success criteria. Primary endpoint data were collected and analyzed 24-months after surgery.

The analysis population which was used to assess these endpoints consisted of all randomized subjects who completed all evaluations at the 24-month time point, regardless of when the 24-month measurements occurred.

Comparison of Success Rates for Efficacy at 24 Months				
	25% Improvement		15-point Improvement	
Characteristic	Charité	Control	Charité	Control
Number of subjects (completers)	184	81	184	81
Oswestry score from baseline				
Success	[illegible]	50 (62%)	117 (64%)	[illegible]
[illegible][1]				
Success	[illegible] (95%)	71 ([illegible])	175 (95%)	74 ([illegible])
Major complications[2]				
Success	182 (99%)	80 (99%)	182 (99%)	80 (99%)
Neurological deterioration[3]				
Success	167 (91%)	77 (95%)	167 (91%)	77 (95%)
Overall Success Rate	117 (64%)	46 (57%)	107 (58%)	44 (54%)

[1] Device failures requiring revision, reoperation, or removal.

[2] Major complications defined as major vessel injury, neurological damage, nerve root injury, or death.

[3] Slight deterioration, significant deterioration, or mixed response at 24 months

The 90% one-sided confidence interval indicates that the overall success rate for the CHARITÉ Artificial Disc is within the non-inferiority margin, regardless of which set of study success criteria are used.

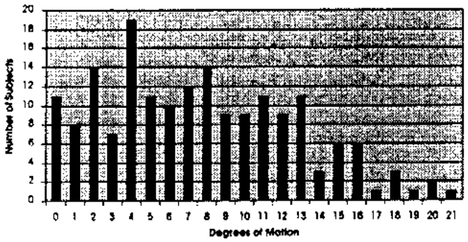
Secondary endpoints comprised measurements of:

- components of the primary endpoints (ODI and neurological scores)
- pain, using a visual analog scale (VAS)
- quality of life, using the Short Form-36 Questionnaire (SF-36)
- disc height, using a standard lateral radiograph
- migration of the device
- radiolucency for CHARITÉ Artificial Disc subjects

All of the results from the secondary endpoints at 24 months indicate the non-inferiority of the CHARITÉ Artificial Disc group to the control group.

Vertebral range of motion (ROM) in degrees at the operative level, determined as the difference in Cobb measurements between dynamic flexion/extension lateral radiographs, was determined at 3, 6, 12, and 24 months. Mean ROM for CHARITÉ Artificial Disc subjects was 5.0, 6.1, 6.9, and 7.5 degrees at 3, 6, 12, and 24 months, respectively. Mean ROM for control subjects was 2.4, 2.1, 1.5, and 1.1 degrees at 3, 6, 12, and 24 months, respectively.

FDA requested that the sponsor provide a histogram showing the range of ROM values recorded for all randomized CHARITÉ Artificial Disc subjects at 24 months. This histogram used values obtained by rounding recorded ROM for each subject to the nearest integer.



Histogram of CHARITÉ ROM at 24 Months

FDA also analyzed ROM data versus O[illegible] [illegible]ccess outcomes for all CHARITÉ Artificial Disc subjects with [illegible]le ROM data at 24 months. No statistically significant associa[illegible] was found between ROM and success/failure at 24 months.

Identification of radiolucency and longitudinal ossification was completed for CHARITÉ Artificial Disc subjects only. Radiolucency was identified for 1 (1%) subject at 12 months and 2 (1%) subjects at 24 months. Longitudinal ossification was identified for 1 (1%), 3 (2%), 7 (4%) and 11 (6%) subjects at 6 weeks, 6 months, 12 months, and 24 months, respectively.

How Supplied

The CHARITÉ Artificial Disc components are supplied prepackaged and sterile. The integrity of the packaging should be checked to ensure that the sterility of the contents is not compromised. Remove implants from packaging, using aseptic technique, only after the correct size has been determined.

Conformance to Standards

The CHARITÉ Artificial Disc Endplates are manufactured from cobalt chromium alloy that conforms to ASTM F-75. The Sliding Cores are manufactured from ultra-high molecular weight polyethylene (UHMWPE) and cobalt chromium alloy that conform to ASTM F-648 and ASTM F-1058, respectively.

Device Retrieval

Should it be necessary to remove a CHARITÉ Artificial Disc, please contact DePuy Spine to receive instructions regarding the data collection, including histopathological, mechanical and adverse event information.

Please note that the artificial disc should be retrieved as carefully as possible in order to keep the implant and surrounding tissue intact. Also, please provide descriptive information about the gross appearance of the device in situ, as well as descriptions of the removal methods, e.g., intact or in pieces.

Limited warranty and disclaimer: DePuy Spine products are sold with a limited warranty to the original purchaser against defects in workmanship and materials. Any other express or implied warranties, including warranties of merchantability or fitness, are hereby disclaimed.

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SYMBOL TRANSLATION			
LOT NUMBER: LOT	CATALOG NUMBER: REF	QUANTITY: QTY	MATERIAL: MATL
SINGLE USE	SEE INSTRUCTIONS FOR USE	USE BY: XXXX-XX	
STERILIZATION BY IRRADIATION: STERILE R	STERILIZATION BY ETHYLENE OXIDE: STERILE EO		
STERILE: STERILE	NON-STERILE: NON STERILE	MADE IN: MADE IN	

MATERIAL:
AcroFlex/Titanium = A/T
Aluminum = A
Aluminum/Plastic = A/P
Barium/Radel = B/R
Calcium Phosphate = CaP
Cobalt Chromium Molybdenum = CM
Cobalt Chromium Molybdenum/Titanium/Calcium Phosphate = CMTC
Foam = F
Hydroxyapatite = HA
Nickel/Titanium = NiTi
Plastic = PL
Plastic/Foam = P/F
Polyester = PY
Polymer = P
Polyethylene/Cobalt Chromium Molybdenum = P/CM
Polymer/Carbon Fiber Composite = P/C
Stainless Steel = S
Stainless Steel/Aluminum = S/A
Stainless Steel/Barium/Radel = SBR
Stainless Steel/Phenolic = S/P
Stainless Steel/Plastic = S/PL
Stainless Steel/Radel/Silicon = SRSi
Stainless Steel/Radel/Titanium Aluminum Nitride = SRTA
Stainless Steel/Titanium Aluminum Nitride = STA
Stainless Steel/Ultem = S/U
Titanium and its Alloys T
Stainless Steel/Radel = S/R
Polyolefin Rubber/Titanium Alloy = R/T
Titanium Alloy/Aluminum = T/A